

FLIGHT

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AND AIRSHIPS

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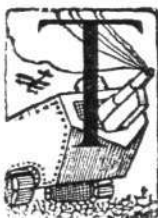
DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1932

- June 3-17. National Aviation Day Displays. (See p. 486.)
June 4. Henly's Rally and Gymkhana, Heston.
June 4. Bristol Airport Summer Flying Meeting.
June 4. Leicester Ae.C. Flying Display and Motor Gymkhana at Ratcliffe Aerodrome.
June 4-12. Tour de France.
June 7. Junior Ae.C. Dinner at Ham Bone Club, W.
June 11. Close of Royal Tournament, Olympia.
June 12. Herts and Essex Ae.C. Meeting at Broxbourne.
June 12. Ae.C. of Germany Air Pageant at Tempelhof.
June 17-18. Night Flying Display at Ratcliffe Aerodrome.
June 17-19. Isle of Man Race.
June 18. Hull Air Display.
June 18. Reading Ae.C. At Home, Woodley Aerodrome.
June 19. Royal Aeronautical Society Garden Party, Hanworth.
June 21. Aero Golfing Society: "Flight" Challenge Cup. Bramshott G.C.
June 21-28. Blackpool Air Pageant, Stanley Park.
June 25. R.A.F. Display, Hendon.
June 25-26. International Tourist Rally, Boulogne.
June 28. Visit to National Physical Laboratory, Teddington.
July 2. Opening of Portsmouth Municipal Aerodrome.
July 2-3. International Tourist Rally, Rheims.
July 3. Meeting at Cote Hill Aerodrome, Rugby.
July 8-9. King's Cup Air Race, start and finish Brooklands.
July 9-10. International Tourist Rally and Meeting, Clermont-Ferrand.
July 14. International Rally, Saint-Brieuc.
July 16. Shanklin Air Pageant.
July 16-17. International Meeting, Dieppe.
July 22-31. International Meeting, Zurich.
July 30-31. Skegness Air Pageant.
Aug. 1. Cowes Air Pageant.
Aug. 11-28. International Touring Competition, Berlin.
Aug. 15-16. Cricket: R.N. v. R.A.F. at Lords.
Aug. 19-21. 4th Annual Canadian Air Pageant, St. Hubert, Quebec.
Aug. 20. Ryde Air Pageant.
Sept. 3. Leicester Chamber of Commerce Day, at Desford.
Sept. 4. Divine Service at Ratcliffe Aerodrome, 2.30 p.m.
Sept. 5. F.A.I. Conference at The Hague.
Sept. 8. International Meeting, Vincenza, Italy.
Sept. 25. Gordon Bennett Balloon Race, Basle.
Oct. 1. Bristol and Wessex Ae.C. Garden Party.
Oct. 18. Aero Golfing Society: Cellon Challenge Cup, West Hill G.C.
Nov. 18-Dec. 4. Paris Aero Show.

EDITORIAL COMMENT



HE Director of Scientific Research does not rise to speak nearly as often as many would like him to do. When he does say something, it is always well worth listening to, and when, as on May 26, he was delivering the Wilbur Wright Memorial Lecture, Mr. Wimperis was both entertaining and informative. It is one of his greatest charms that, in spite of his exalted position as Director of Scientific Research, he is very human indeed, and has the gift of expressing abstruse Research problems in such terms that even the non-technical can grasp the subject in a general way. In his Wilbur Wright Memorial Lecture to the Royal Aeronautical Society Mr. Wimperis had chosen to speak on new methods of research in aeronautics, and this he did in such a way that probably no single member of his distinguished audience failed to obtain a very good idea of the reasons for our new research equipment and the main purposes for which that equipment is being created.

If there is any criticism of the lecture to be made, and it did not call for any, it can only be on the score of modesty. Mr. Wimperis did not, perhaps, impress upon his audience, as he might very well have done, the importance of Great Britain's contribution to aeronautical research. In fact, certain sections of the lecture almost inferred an apologia for the relatively modest dimensions of some of the new research equipment about to be put into service in this country. That was hardly necessary, although Mr. Wimperis could well have mentioned that in the last Air Estimates research was one of the items to suffer from the economy "axe." He did not do so. On the contrary, he explained why, with much more modest equipment than that which is at the disposal of the American National Advisory Committee, he hoped to do all that was necessary. That is a very modest way of pointing out that without sacrificing efficiency, British aeronautical research is endeavouring hard to save the taxpayer's money in these difficult times.

On the technical side it was interesting to those

who did not hear (or read) Mr. Relf's lecture to the British Association last year to be reminded by Mr. Wimperis that the new British variable density tunnel is capable of giving a Reynolds number nearly twice as large as that obtained in the American V.D. tunnel. This is an indication that we have benefited by the long delay in building the British tunnel (the American V.D. tunnel was built nine years ago), and that we have, as Mr. Wimperis said, been able to profit by the American experience, freely communicated to us by the N.A.C.A.

On the subject of the new large atmospheric wind tunnel to be erected at Farnborough, and which is being built by Boulton & Paul, Ltd., Mr. Wimperis effectively answered those who have claimed that this tunnel is out of date before it is built, because it has a jet diameter of only 24 ft. as compared with the 60 ft. by 30 ft. of the American tunnel. Modern aerodynamic theory can account for most of the problems in connection with wings, and in any case we have, as the Director of Research pointed out, the Parnall research monoplane (described and illustrated in FLIGHT of April 17, 1931) for measuring on full scale the forces on any imaginable monoplane wings, with any degree of taper or twist, any camber and any thickness. Thus there was really no very valid reason for building a wind tunnel large enough to take a complete aircraft, or rather capable of including in the airstream the complete machine. For, as Mr. Wimperis said, the new 24-ft. tunnel is being so constructed that an aircraft up to 56-ft. span can be accommodated and the forces on the central twenty-odd ft. or so measured. This will enable such subjects as cooling and cowling of engines, the effects on drag of excrescences, the nature and magnitude of interference between adjacent parts, and full-scale airscrews to be investigated under conditions identical with those obtaining in actual flight, and yet with far greater facility in making changes than would obtain if the same information was sought by means of aircraft in flight.

The new vertical wind tunnel quite evidently intrigued the Director of Research, and certainly it is a very fascinating piece of apparatus, judging by the film shown at the lecture. The more technically minded of the audience would probably have liked a little more information about this tunnel, or rather about the models tested in it. For example, what steps are taken to ensure that the moments of inertia of the models are identical, around all axes, with those of the machine which the model represents. The subject was mentioned briefly, but further details would have been interesting.

Great Britain has, in spite of a late start, made a very special study of the seaworthy flying boat, and

has attained in this field of aeronautics a leading place among the nations of the world. It is therefore gratifying to discover from Mr. Wimperis' lecture that this country is obviously determined to maintain this leading position by using every possible means of still further improving the qualities of our marine aircraft. The new tank of the R.A.E. Mr. Wimperis hopes to put to work on accelerated and decelerated motion, a thing which has never been attempted before, and the technique of which may well bristle with difficulties, but which really gets down to the subjects in which we particularly require information: the behaviour of hulls and floats during taking off and alighting, and the very difficult and complicated problems connected with the phenomenon known as "porpoising." British seaplanes are, taking it all round, less prone to this vice than many foreign marine aircraft, but if, with the new tank, we can include the effects of the airframe, we shall be in a still better position to combat any incipient tendencies to porpoising.

It was inevitable that the Director of Research should include in his paper a reference to the Schneider Trophy Contests. And we feel entirely at one with him when he says that he does not in the least regret that these contests have now come to an end. We do not think anyone does. A point had been reached where the risks involved to the Schneider personnel no longer bore any reasonable proportion to the knowledge likely to be gained. We are aware that there are those who think that Mr. Wimperis might have admitted the importance of the results achieved a little more outspokenly than he did. Probably the reason was that Mr. Wimperis was dealing with pure research, and the effects of the Schneider Contests were, many of them, of a somewhat indirect nature. The Rolls-Royce "R" engines and the Supermarine monoplanes were a direct result of the Schneider. All the problems connected with them had a direct bearing upon either pure research or technical development. But there were many other and more indirect ways in which the Schneider Contests benefited British aviation. The winning, three times in succession, by Great Britain drew the attention of the world to the qualities of British aircraft, and undoubtedly helped materially in increasing our prestige. The Director of Research may be forgiven for not dwelling on this aspect of the Schneider. He very properly confined himself to the research side, which is the one with which he is concerned. But he would most probably be the first to admit that many benefits other than those connected with research accrued from the late, but not lamented, Schneider Contests.



At St. James's Palace

HIS MAJESTY THE KING held a Levée on May 30 at St. James's Palace, at which the following were amongst those presented to His Majesty:—Sqd. Ldr. J. Baker, M.C., D.F.C.; Flt. Lt. W. Baker, Royal Canadian Air Force; Flt. Lt. G. Banting; Air Commodore J. Bowen, O.B.E.; Flt. Lt. T. Warne-Browne, D.S.C.; F/O. G. Canavan; F/O. E. Chatterton, A.A.F.; Wing Com. C. Cox, A.F.C.; Group Capt. W. Sholto Douglas, M.C., D.F.C.; Sqd. Ldr. P. Fullard, D.S.O., M.C., A.F.C.; Flt. Lt. H. Gemmel; Group Capt. E. Gossage, D.S.O., M.C.; F/O. J. Huins, A.A.F.; Sqd. Ldr. L. Jarvis; Sqd. Ldr. A. Lang, M.B.E.; Sqd. Ldr. A. Ledger,

M.B.E.; Sqd. Ldr. R. Macfarlane, M.C.; Wing Com. E. Manning, D.S.O., M.C.; Wing Com. G. Padley; Flt. Lt. N. Paynter; Sqd. Ldr. B. Robertson, A.F.C.; Group Capt. F. Robinson, D.S.O., M.C., D.F.C.; Air Marshal Sir Geoffrey Salmond, K.C.B., K.C.M.G., D.S.O.; Group Capt. S. Smith, O.B.E.; Wing Com. E. Tomkinson, D.S.O., A.F.C.; Sqd. Ldr. E. Turner, A.F.C.; Sqd. Ldr. W. Underhill, D.S.C.; Sqd. Ldr. H. Walmsley, M.C., D.F.C.; Group Capt. A. Walser, M.C., D.F.C.; Flt. Lt. E. Waring, D.F.C.; Sqd. Ldr. G. Wilson, etc. Others present included the Secretary of State for Air, Air Chief Marshal Sir John Salmond, Air Marshal Sir E. Ellington (Principal Air Aide-de-Camp), Wing Com. Louis Greig, etc.

The Gipsy- Engined "Swift"

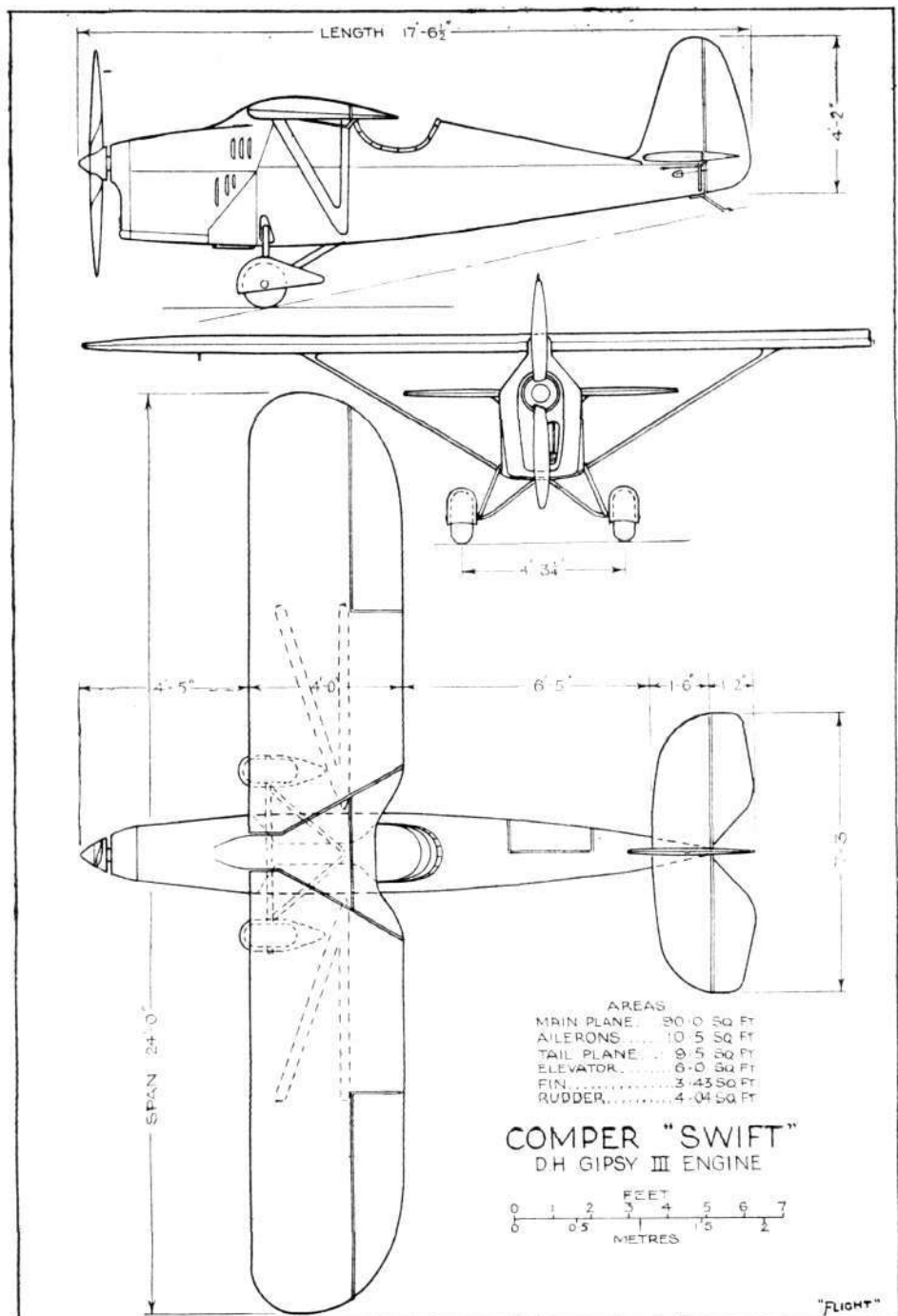
ORIGINALLY designed for, and fitted with, the A.B.C. "Scorpion" two-cylinder engine of some 35 h.p., the "Swift" monoplane produced by the Comper Aircraft Co., Ltd., of Hooton Park Aerodrome, Cheshire, has undergone development in the direction of more and more power, accompanied by a corresponding increase in performance. First came the "Pobjoy Swift," made possible by the passing in fine style of the very light little Pobjoy "R" engine of 75-80 b.h.p. That type quickly "made history." On one of them Mr. Butler flew to Australia in record time, continuing his touring afterwards and piling up an impressive mileage. On another Mr. Taylor twice flew across the Andes mountains, clearing this little "obstacle" with plenty to spare.

Yet another variant of the "Swift" is to appear soon. Designed specifically for the King's Cup Air Race (one has been entered by H.R.H. the Prince of Wales), this is fitted with a de Havilland "Gipsy III" inverted engine, and doubtless will in time find many uses other than racing.

No photographs of the Gipsy-engined "Swift" are available at the moment, but the general appearance is well shown in the scale drawings. The "Gipsy III" is somewhat long and deep for such a tiny little machine, and at first one is apt to regard the "Pobjoy Swift" as the better looking of the two types, although doubtless familiarity will soon accustom one to the altered appearance. The "Gipsy Swift" is not, of course, intended to supplant the "Pobjoy Swift," but will be an alternative type, both being available to the buying public.

Generally speaking, the "Gipsy Swift" does not differ materially in design and construction from the "Pobjoy Swift" other than in the matter of engine and installation. The wing dimensions remain unaltered at 24 ft. (7.32 m.) span and 90 sq. ft. (8.36 m².) wing area. With the heavier engine, etc., the gross weight goes up to 1,130 lb. (514 kg.), which brings the wing loading up to 12.55 lb./sq. ft. (61.5 kg./m².). The power loading is, however, low at 9.42 lb./h.p. (4.28 kg./CV).

For obvious reasons it is not possible to give definite performance figures at present. That the new machine will be considerably faster than the Pobjoy-engined model is to be expected, the power having been increased by some 50 per cent. and the frontal area and overall drag coefficient probably remaining substantially as before. Owing to the fact that the wing loading has increased, the rate of climb, which was always very spectacular in the "Pobjoy



Swift," will very likely be but little altered, and we should imagine that it is mainly in the matter of speed that the new type will score.

When the "Swift" is fitted with the "Gipsy III" engine the tare weight of the machine becomes 730 lb., which leaves a disposable load of 400 lb. It is intended that the normal weight of fuel and oil shall be 180 lb. (22 gallons of petrol), so that the useful load, i.e., pilot and luggage, etc., becomes 220 lb. For a pilot of average weight this leaves a very good margin for luggage, and the machine should enable the private owner who wishes to use the machine for touring at high speed to take with him enough "spare clothes" for even fairly extensive tours.

As both the machine and its new engine are thoroughly well tried out, the reliability of the combination should be satisfactory, and the only subject left for speculation is the speed. That we shall probably not know until the end of the King's Cup Race on July 8-9. Everyone will wish His Royal Highness every possible good fortune in the race.



German Autogiro Flies

THE first flight has now been made with the Cierva Autogiro built in Germany by the Focke-Wulf Aircraft Co., of Bremen. This is the first Autogiro to be constructed in Germany, the Focke-Wulf firm having obtained licence from the British company to build in Germany. The first

machine is of the C.19 Mark IV type, fitted with 100-h.p. Siemens radial air-cooled engine, engine-driven rotor starter, and folding rotor blades. The first test flight was made by Capt. A. H. C. Rawson, and was witnessed by Mr. de la Cierva himself, who had flown over in the cabin Autogiro. The machine is now undergoing further tests.

New Methods of Research

THIS year's Wilbur Wright Memorial Lecture was delivered before the Royal Aeronautical Society by Mr. H. E. Wimperis, C.B.E., M.A., F.R.Ae.S., Director of Scientific Research at the Air Ministry, and Vice-President of the Royal Aeronautical Society, on May 26, in the Science Museum, South Kensington.

Mr. Wimperis had called his lecture "New Methods of Research in Aeronautics," and recalled that it was twenty years ago, almost to a day, since the world was saddened by the news of the death of Wilbur Wright. In speaking of the early work of the Wright Brothers, Mr. Wimperis said that although their tools were primitive, their methods were scientific. "How different," he said, "from some of the impetuous inventors of to-day!"

Pointing out that nine years had passed since a Wilbur Wright lecturer dealt with the subject of research, the lecturer on that occasion being Dr. J. S. Ames, chairman of the American National Advisory Committee for Aeronautics, Mr. Wimperis said that in the world of aeronautics nine years was a long time, and that new methods of research had called for new tools. By these he meant the new wind tunnels of America and Europe, the new testing tanks for seaplane hulls, and the Farnborough vertical tunnel for spinning tests. What he proposed to do was to give a comparative study of these new tools in relation to the objects sought to be attained.

Before dealing with the new tunnels, etc., Mr. Wimperis outlined the history and internal structure of British aeronautical research.

The Compressed-air Tunnel

The force which motion through the air applied to any structure might be very nearly proportional to the square of the speed, but not quite. A coefficient known as the

Reynolds number was brought in. The law could be written:

$$F = V^2 L^2 f(R),$$

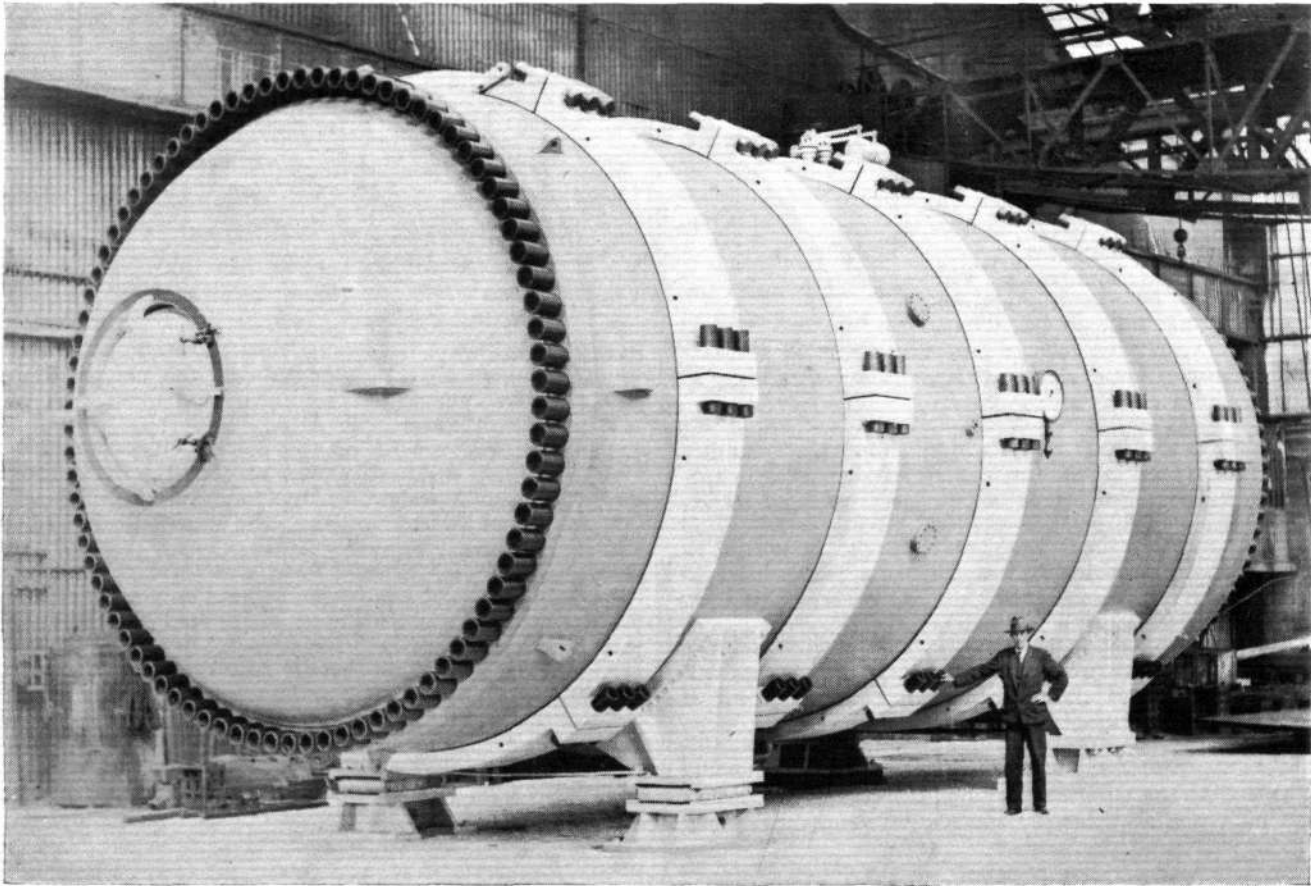
where F was the force, V the velocity, L the principal length and R the Reynolds number. If this were constant, it would be easy to transfer results from model to full scale. Unfortunately, it varied with the velocity, the length, and the kinematic viscosity of the fluid in which the motion took place. The new wind tunnels aimed at the reproduction of the actual Reynolds number. In the new British compressed-air wind tunnel it was possible, by increasing the density, to test models at full Reynolds number without the need to go to large models or high speeds. Mr. Wimperis gave the following comparative data of the American and the N.P.L. compressed-air tunnels:

	American tunnel.	British tunnel.
Diameter of jet (ft.) ..	5 ..	6 ..
Pressure (in atmospheres) ..	20 ..	25 ..
Wind speed (ft./sec.) ..	70 ..	90 ..
Reynolds number ..	R ..	1.93R ..

Mr. Wimperis pointed out that the fact that we were aiming at a Reynolds number nearly twice the American was a result of the greater speeds attained by aircraft since the American tunnel was built, and the fact that we had been able to profit by America's experience, which had been fully communicated by the American N.A.C.A.

The Large Air Tunnel at Farnborough

Before dealing with the reasons which led to the construction of the new 24-ft. jet tunnel at Farnborough, Mr. Wimperis recalled the experience of the American N.A.C.A., first with their 20-ft. tunnel and recently with their new



FOR WORK AT FULL REYNOLDS NUMBER : The compressed-air, or variable density tunnel at the National Physical Laboratory at Teddington. The tunnel was made for the N.P.L. by John Brown & Co., Ltd., of Sheffield, while the steel rings and domed ends were made by Firth & Sons, Ltd. The inside diameter of the tunnel is 17 ft. and the finished weight 250 tons.

giant 60-ft. x 30-ft. jet tunnel. When the British Air Ministry asked the Aeronautical Research Committee to advise on the construction of a very large wind tunnel, the Committee advised that: "There are three main classes of research which could be better and more economically performed in a large wind tunnel than by other means, viz., (1) experiments on the cooling of air-cooled

necessary for absolute safety. The fresh air was introduced around the inlet jet, and the surplus was drawn away from the periphery of the exit cone.
By way of explaining why the A.R.C. did not recommend the construction of a tunnel as large as the American, Mr. Wimperis said that it had not been considered necessary to build a tunnel large enough to take the complete

WIND TUNNELS

Description.	Size of jet.	Speed. (ft./sec.)	Pressure : Atmospheres.	H.P.	Ratio of energy passing per sec. to input to fan motor.	Nature of circuit.
N.P.L. 7 ft. No. 1	7 ft. x 7 ft.	67	1	60	0.53	Open.
" No. 2	7 ft. x 7 ft.	83	1	120	0.51	"
" No. 3	7 ft. x 7 ft.	96	1	200	0.48	"
N.P.L. Duplex	14 ft. x 7 ft.	100	1	400	0.53	"
N.P.L. C.A.T.	6 ft. diam.	90	25	500	2.3	Closed.
N.P.L. 9 ft. x 7 ft.	9 ft. x 7 ft.	210 (expected)	1	400	2.6	"
R.A.E. 7 ft. No. 1	7 ft. x 7 ft.	90	1	125	0.61	Open.
" No. 2	7 ft. x 7 ft.	140	1	300	0.95	"
R.A.E. 5 ft. low speed	5 ft. diam.	162	1	75	2.4	Closed.
R.A.E. 5 ft. high speed	5 ft. diam.	315 (expected)	1	500	2.4	"
R.A.E. 24 ft.	24 ft. diam.	176 (expected)	1	2,000	2.4	"
N.A.C.A. C.A.T. (before reconstruction)	5 ft. diam.	74	20	250	1.35	Closed.
N.A.C.A. 20 ft.	20 ft. diam.	162	1	2,000 (Diesel)	1.45	"
N.A.C.A. 60 ft. x 30 ft.	60 ft. x 30 ft.	169	1	6,500	2.2	"

and water-cooled engines ; (2) measurements directed towards the reduction of the resistance of the central parts of actual aeroplanes ; and (3) tests of full-scale airscrews."

After full thought, it was advised that there would be no material advantage in going beyond a jet of 24-ft. diameter. A 5-ft. jet model was made of the proposed design, and for economy of power a closed-return circuit was decided upon. This model was of great service in assisting in the design of the 24-ft. tunnel, but was also subsequently found to be a very successful piece of equipment in itself. With an engine of but 75 h.p. an air speed of 115 m.p.h. was attainable. With the motor of 500 h.p. now being installed, the air speed should be 215 m.p.h., making the model of permanent use for model airscrew investigations.

Closed circuits were preferred, because, apart from being more compact, the power required to maintain the air stream was lower. The energy ratio of a number of tunnels was given in the above table.

It was estimated that in the new Farnborough tunnel an air speed of 120 m.p.h. would be attained with a horsepower of 2,000. The general layout of the building was such that an aeroplane with a wing span of as much as 56 ft. could be got in. The first work to be done in this tunnel as soon as it was ready, Mr. Wimperis said, would be the investigation of the air-cooling of engines, the performance of airscrews, the effect of excrescences on the fuselage in adding to resistance or adversely affecting the flow near the tail, and on the draughtiness of cockpits.

As the new tunnel would be used for testing with actual aero engines running, the question of poisonous gases from the exhaust was important. It was estimated that about 250,000 cu. ft. of fresh air would have to be drawn in every minute in order to ensure the degree of dilution

aircraft, as the Parnall research monoplane was available for testing wings of the most various types in actual flight. What could not, however, be done in flight was modification of the engine cowling with simultaneous observation of cylinder-head temperatures and change in drag of the aircraft.

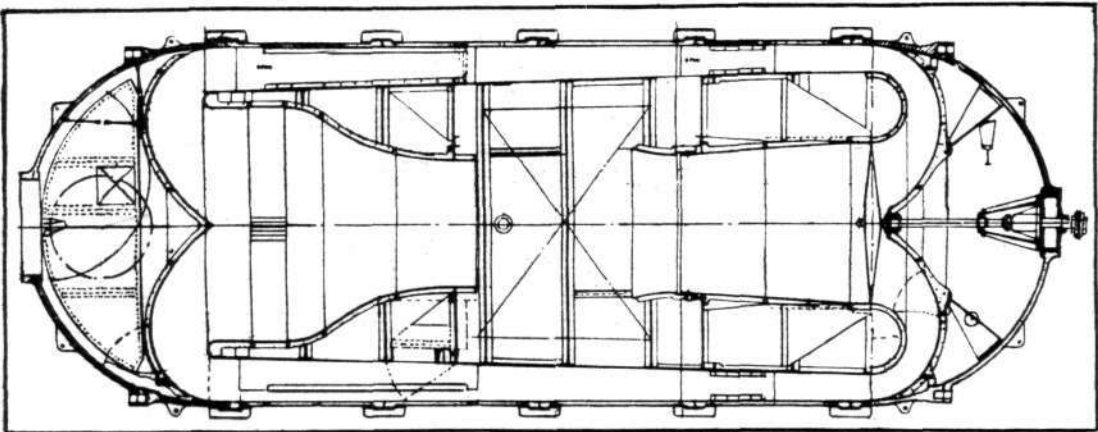
The R.A.E. Seaplane Model Testing Tank

After referring to the tank built by Short Brothers at Rochester some years ago, the first to be constructed expressly for testing models of seaplane floats and flying-boat hulls, Mr. Wimperis outlined briefly the particulars of the new large tank built recently for the American N.A.C.A., stated to be capable of speeds of 50 m.p.h. or more, with a cross-section of 24 ft. in width and a depth of 12 ft., no less than 2,000 ft. long.

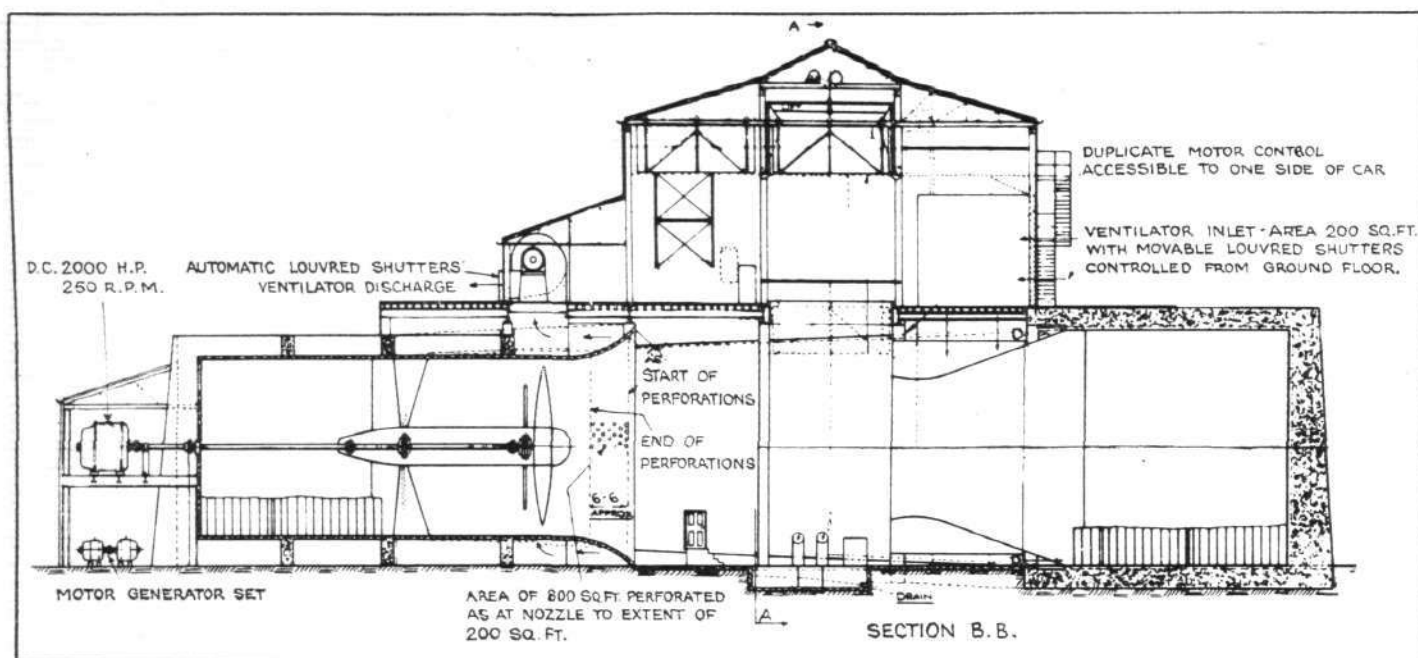
In this country the conclusion had been arrived at that a tank 9 ft. wide by 4½ ft. in depth and only 650 ft. long would do what was necessary. The speed aimed at in the new British tank was only 40 ft./sec. (27 m.p.h.). Mr. Wimperis asked the question: "Are we being too modest?" He answered this question himself by examining the data of the sort of model tests contemplated.

"If we suppose," Mr. Wimperis said, "that we desire to make measurements on the model of a very large flying boat, say 110 ft. in overall length, the length at the water line when at rest will be about 80 ft. and a model to a ninth scale would have a length just equal to the width of the tank, namely, 9 ft. If the taking-off speed of the boat were 60 knots, the equivalent speed at which the model must be towed would be 35 ft./sec., or well within the 40 ft./sec. which I named above as the full speed of the tank carriage."

If, Mr. Wimperis said, larger models and higher speeds



Diagrammatic view of the compressed-air tunnel at the N.P.L. (Illustration by courtesy of the N.P.L.)



R.A.E. design for 24-ft. atmospheric tunnel. (R.A.F. Official, Crown Copyright.)

were required for any unusual purpose, they could fall back on the experiment now being carried out at Felixstowe, in which a "Moth" fuselage was used to taxi a 25-ft. model of a flying-boat hull (in this case a 1/2.4 scale model of the Short "Singapore II") by means of a force-recording undercarriage. For this experiment they had drawn upon the experience of the Berlin D.V.L.

When the new tank at Farnborough was used in the orthodox way for making measurements at steady speed, the whole 650 ft. of travel would be made up as follows: First, allowing 10 ft. for the length of the carriage, and 20 ft. for emergency braking at the end of the run, there was left 620 ft. to be divided between 190 ft. of the initial acceleration (at 4.2 ft./sec./sec.), 130 ft. of braking at the end of the run (at 6 ft./sec./sec.), and in between these two a steady run of 300 ft. at a speed of 40 ft./sec.

As they were not really interested in the constant-speed run, but in acceleration and deceleration, the possibility would be explored of making measurements when the speed was rising or falling. They would prefer to cut out the 300 ft. of steady run and divide it between the accelerating and braking runs, so as to enable a speed of 50 or 55 ft./sec. to be obtained. The resistance offered by the water must be different when the speed was rising, and it was this condition which they wished to study. As far as he knew, that had never been done. A careful study would have to be made of the new tank and its carriage, and the model would have to be not only geometrically but also dynamically similar to the full-size aircraft. If they should succeed, it would be possible to investigate on model scale the troublesome phenomenon of porpoising.

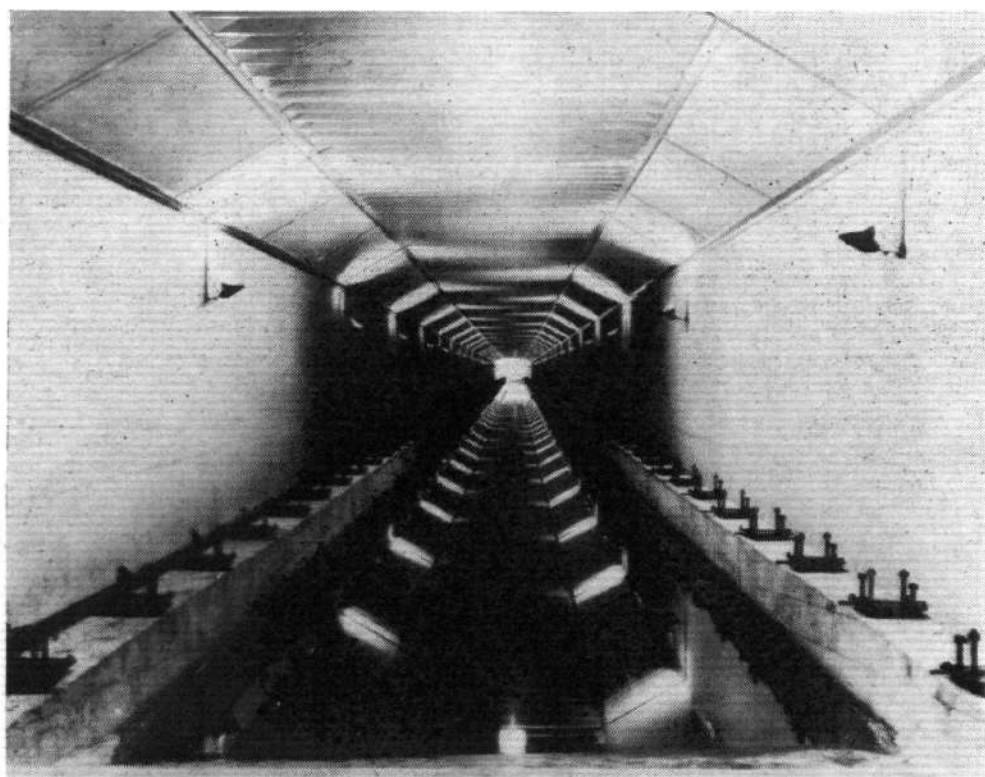
The R.A.E. Vertical Tunnel

Coming to the newest and what he considered the most intriguing of all the new research equipment, the new vertical wind tunnel at Farnborough, Mr. Wimperis said that when the method of dropping models from the roof of the balloon shed at Farnborough came to an end, he supported vigorously the construction of a vertical tunnel at the

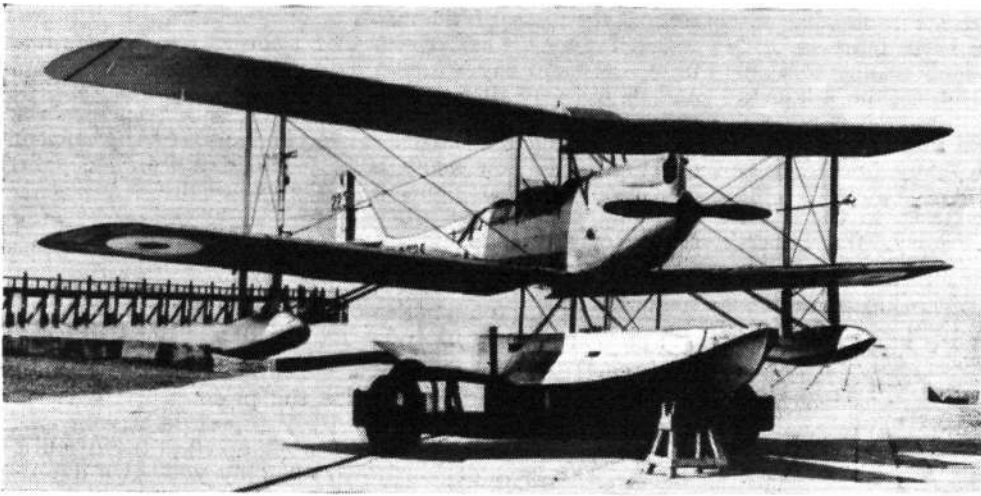
R.A.E. for work on spinning. The first step was to build a model tunnel, of 2-ft. diameter. This worked admirably. Next came the construction of the actual tunnel, in an existing building, 12 ft. in diameter and 30 ft. long, with an air speed of 30 ft./sec. This was completed and put to work just before the end of last year. The models, made of balsa wood, which is very light, had to be dynamically as well as geometrically similar to the full-size machine. Hence the dimensions, the mass and the moments of inertia all had to be to the proper scale. It was usual to employ the tunnel not merely to observe the type of spin, but to study the motion when the controls were suddenly moved over by a delay action mechanism incorporated in the model.

Visualisation of Air Flow

Mr. Wimperis next dealt, quite briefly, with the use of apparatus for making air flow visible, mentioning the shadowgraph method in which an electrically-heated wire



THE NEW TANK AT THE R.A.E. : A total carriage travel of 650 ft. is available. (R.A.F. Official, Crown Copyright.)



NOT A NEW TYPE OF "MOTH" SEAPLANE: This photograph shows the force-recording undercarriage used at Felixstowe for taxiing tests of large-scale models of flying-boat hulls (in this case that of a Short "Singapore II"). (R.A.F. Official, Crown Copyright.)

is used, the shadow of the heated air in the wake of which can be viewed stroboscopically or be photographed and the "smoke" method in which the introduction of titanium tetra-chloride renders the air flow visible.

Suppression of Noise

On the subject of noise suppression, Mr. Wimperis said that the noise was at present the greatest deterrent to air travel. The engine and airscrew were equally responsible. The aim of research must be the elimination of noise at its source, but since this was a difficult task, it was necessary as an intermediate step to prevent external noise from penetrating to the interior of the cabin of aircraft. It was fortunate for the passengers that engine and airscrew noise could be reduced by 20 decibels or more by efficient lagging of the cabin walls. In the Short "Kent" class of flying boat, and in the Handley Page 42 type, noise had been reduced until it was comparable with that in an ordinary railway carriage.

Taking as his text for the last part of the paper the quotation from Henry Ford that we should "simplify and add more lightness," Mr. Wimperis asked: "Are we 'adding more lightness'?" He saw an increasing efficiency in both wing and fuselage design which tended in that direction, but speeds were ever increasing and the shocks on entering disturbed air seemed to be increasing, too, so that the addition of more lightness was becoming increasingly difficult.

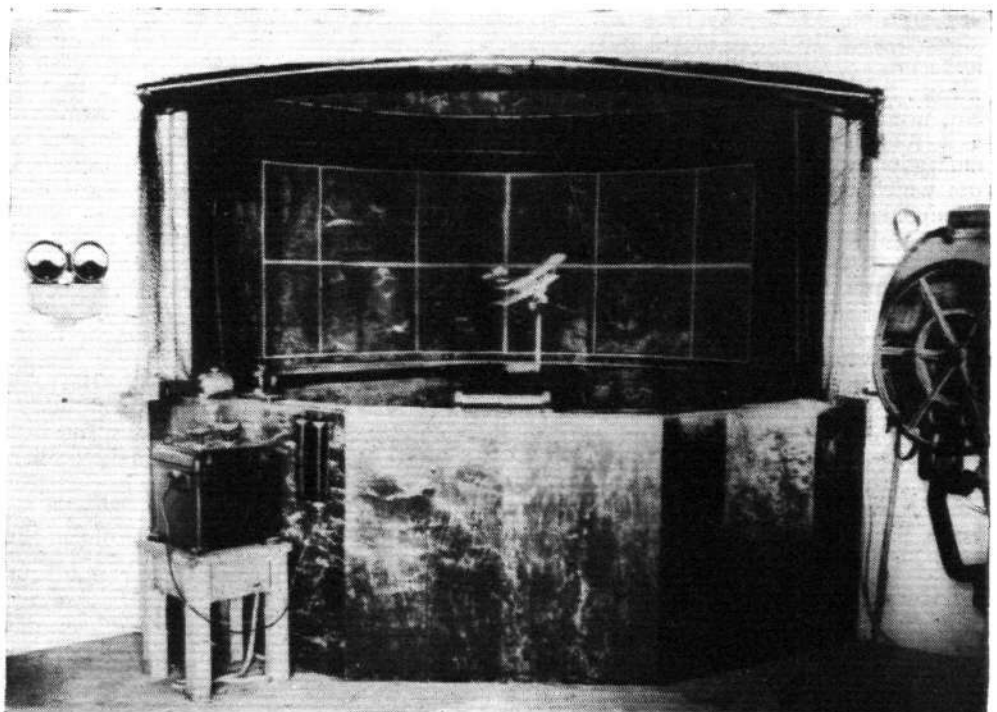
"Are we simplifying?" was Mr. Wimperis' next question, and he admitted that he was not sure that we are. His doubt increased when he thought of our growing complex control surfaces.

In conclusion, Mr. Wimperis admitted that if he were asked whether all this research activity was bound to add to human happiness, he would have to give a negative answer. The provision by scientific research of increased power over nature produced greater happiness if, and only if, it was wisely employed. The benefits to be enjoyed from any new discovery, that of human flight for instance, turned less upon its mechanical perfection, however splendidly satisfying to the engineer, than upon the dreams and ideals of those who were able to guide its destiny and guard its use.

Of the Schneider Trophy Contests, Mr. Wimperis said that, although he was grateful for all that we did learn—and we learnt much—he for one did not in the least regret that the contest was now at an end.

Memorial Lecture, he said that this was founded in 1913 in memory of that great pioneer, Mr. Wilbur Wright, and had been delivered by an Englishman and an American alternately ever since. He then announced that Mr. T. W. K. Clarke had been presented with the Society's bronze medal, an honour which had only been conferred on two previous occasions. Mr. Clarke, he said, was probably the first person in this country to start an aviation company of his own, and he had been working at the R.A.E. since 1912, an establishment of which he was still a member. Introducing the lecturer, he said that we owed a very great deal of the progress made during recent years to the perspicacity and acumen of Mr. Wimperis, whom he might justly describe as the right man in the right job.

Miss Amelia Earhart, on being asked to say a few words, emphasised the fact that her flight really meant nothing for aviation, and that she had chiefly done it for her own satisfaction. A point she wished to bring out, she said, was that, although the previous speakers had referred to the fact that the lecture was being held beneath the wings of the original Wright machine, and although much had been said about the pioneering of the Wright Brothers, no mention had as yet been made to the part Katherine Wright had played in the building of that particular machine. In America, she said, Mr. Orville Wright always



FOR SPINNING TESTS OF MODELS: The new vertical wind tunnel at the R.A.E. has a diameter of 12 ft. and in it can be tested in spinning flight models having a vertical rate of descent up to 30 ft. per sec. (R.A.F. Official, Crown Copyright.)

referred to his sister's work as one of the most important parts of their achievement, for without her it is very unlikely that the machine would have been built at all. Miss Earhart expressed her very grateful thanks for the reception she had had over here, and for all the kindness she had received.

Col. the Master of Sempill proposed a vote of thanks to the lecturer. He said that there were many present who had attended every one of the twenty Wilbur Wright Memorial Lectures. He made short reference to the latest acquisition to the Science Museum, namely, the Super-

marine S.6b, and then asked Col. Moore Brabazon to second the vote of thanks.

Col. Moore Brabazon said that some of the lectures had been, he could say without hesitation, better than others, and he felt sure that everyone would agree that the present was a vintage year. He made humorous reference to the audience being a "model" one, and also to the ancient question as to how many fairies could dance on the point of a needle. After glancing at the chairman, he said that everyone would agree that point at any rate had been settled once and for all.

AMELIA EARHART AT THE ROYAL AERO CLUB

MISS AMELIA EARHART (Mrs. G. P. Putnam) was the guest of honour at a reception held at the Royal Aero Club on Thursday last, May 26. Miss Earhart was introduced to the members by the President of the Club, Lord Gorell, and in answer to questions she informed them that her altimeter ceased working soon after she left Harbour Grace. When she came near the Irish coast, therefore, she did not think it advisable to go straight over the southern end, as her maps did not allow her to gather the height accurately. Moreover, she was at that time flying in very thick, thunder-stormy weather, with bad visibility. She therefore went up the coast some way until it was clearer, where she found a railway. This she followed in the hopes that it would lead her to a large town where she, being American, naturally expected to find an airport. As it was Ireland she was flying over, she was disappointed, and on finding Londonderry she flew round until she found a field of suitable size into which she could land her "Vega." She said that she did not make any allowance for the wind during the trip as she was flying a great circle course over which the effect of the wind balanced itself out, as during the first part the drift was southerly and during the second part northerly. For her direction, as she had to fly "blind" from 11.30 p.m. till dawn, she relied largely upon her directional gyro, and checked this by her two magnetic compasses. Present at the reception were also many English lady pilots, including Lady Bailey, Miss Amy Johnson and Miss Winifred Spooner.

Congratulations for Miss Earhart

At the completion of her Transatlantic flight Miss Earhart received a message of congratulation from Their

Majesties the King and Queen. President Hoover sent the following cable:—"I voice the pride of a nation in congratulating you most heartily upon achieving the splendid pioneer solo flight for a woman across the Atlantic Ocean. You have demonstrated not only your own dauntless courage but also the capability of women to match the skill of men in carrying through the most difficult feats of high adventure." The Marquess of Londonderry, Secretary of State for Air, personally telephoned his congratulations to Miss Earhart. Mr. Ramsay MacDonald, the Prime Minister, sent the following message from Lossiemouth:—"Please give my friend Miss Earhart my warmest congratulations on her splendid solo flight, the most outstanding solo flight of this nature ever made by a woman. Not only has Miss Earhart shown great courage, resource, and intelligence, but great skill as a pilot and navigator, and we are very proud indeed of our distinguished guest."

On May 24 Miss Earhart was received by the Prince of Wales at St. James's Palace, where she had an informal talk lasting about half an hour about her flight.

Miss Earhart attended the luncheon given by the London District of the Institute of Journalists at the Criterion Restaurant on May 23, to welcome Mr. Mellon, the American Ambassador.

She also attended the annual council dinner preceding the Wilbur Wright Memorial Lecture on May 26—the first time that a woman has attended the dinner.

It was reported from Washington that the Senate had passed a special Bill to authorise the award of the American Distinguished Flying Cross to Miss Earhart in recognition of her sole flight across the Atlantic.

Miss Earhart's Lockhead is now on view at Selfridge's Stores, Oxford Street.

International Economics at the Royal Aero Club

MR. VERNON BARTLETT was the guest at the first of a series of monthly dinners which was held at the Royal Aero Club on Wednesday, May 25. Mr. Bartlett delivered a discourse on International Affairs, including the place of the League of Nations in the establishment of a firm and lasting peace for the world. After his instructive talk there was a discussion in which many members took part. As is almost inevitable, this developed into a debate—somewhat heated at times—on international economics, from which one gathered the impression that the majority considered it necessary for the welfare of Great Britain at the present time that a tariff wall should be maintained, but that that wall should be lowered when possible as a step towards the Utopian condition of amicable world free trade. Further dinners like this one will be held monthly.

National Aviation Day Displays

DISPLAYS in connection with Sir Alan Cobham's National Aviation Day campaign will be held as follow:—June 3, Porthcawl (Flying Ground, the Front); June 4, Bristol, Municipal Airport, Whitechurch; June 5-6, Bath, Chapel Farm, Lansdown; June 7, Welshpool, Wernllwyd Farm, Newtown Road; June 8, Wrexham, Borrass Lodge, Borrass Road; June 9, Stoke-on-Trent, Municipal Airport, Meir, Longton; June 10, Manchester, Airport of Manchester, Barton Moss; June 11, Liverpool, Municipal Airport, Speke; June 12, Chester, Cop House Farm, East Saltney; June 13, Stafford, Stafford Common; June 14, Grantham, Spittlegate Hill; June 15, Boston, The Flying Ground, Sleaford Road; June 16, Doncaster, Armthorpe Aerodrome, Park Lane; June 17, Lincoln, St. John's Heath, Bracebridge.

Italy and the Speed Record

It is reported that Italy is preparing four high-speed "mystery" seaplanes at Lake Garda for an official

attempt on the world's speed record of 407½ m.p.h. established by Flt. Lt. Stainforth. For some time past the seaplanes have been making practice flights on Lake Garda, and Gen. Balbo, the Italian Air Minister, claimed recently that they had already broken the British record, but unofficial reports of the speeds hitherto attained may be discounted.

Air Mails for Norway and Italy

THE Postmaster-General announces that, commencing as from June 1, air mail correspondence for Norway will be sent on the night air mail service to Berlin. The latest time of posting in the air mail letter-box outside the General Post Office, London, will be 8 p.m. weekdays and correspondingly earlier elsewhere. Correspondence will be due to reach Oslo in time for the first delivery on the second morning after despatch. The 5 p.m. service to Norway was discontinued as from June 1. It is also announced that an additional despatch of air mail correspondence for Italy has been arranged. The posting time for this despatch will be 6.45 a.m. weekdays in the air mail letter-box outside the General Post Office, London, and correspondingly earlier elsewhere. Correspondence will be due to reach Genoa the following morning, and Rome, Naples and Palermo the following afternoon.

Reliability of Aero Engines

A REMARKABLE advance in the reliability and economy of upkeep of the modern aero engine is revealed by the latest figures issued in connection with the air-cooled Armstrong-Siddeley engines used by Imperial Airways, Ltd. The period between complete overhauls for the 14-cylinder Jaguars is 500 hr. without top overhauling. Several 7-cylinder Lynx engines have run for 600 hr. without top or complete overhaul and one ran for 641 hr. The total engine miles flown by the Jaguar engines is now nearly 6,700,000, while the Lynx engines in Avro X aircraft have flown over 4,277,602 miles.

PRIVATE FLYING & GLIDING

THE "UNION DES PILOTES CIVILS" MEETING, ORLY

FAVOURED with fairly good weather at the beginning but with continual showers prevailing during the second day, the Eighth Annual Meeting of the "Union des Pilotes Civils" (Civil Pilots' Association) took place at the Orly Airport (Paris suburb) on Sunday and Monday, May 15 and 16 last. It was the first important aviation meeting held in France this season, and it also took on an additional interest as the "National Aviation Days," the large meeting which has been held at Vincennes during the Whitsuntide holidays for the past several years, under the auspices of the Aero Club of France, was omitted this year.

The proceeds of this Civil Pilots' Association Orly meeting were turned over to their Accident Insurance Fund for disabled airmen. Many of the leading French pilots volunteered their services and a number of well-known planes that have recently made long-distance or other records were present. Prizes for the various events were also awarded by leading houses in the aeronautical trade.

The programme was a varied one and included interesting exhibitions of gliding, stunt flying, landing competitions, balloon bursting, live parachute drops, aerial trapeze exhibitions and a handicap race to Chartres and return, a distance of about 95 miles. Some 60 planes of different types and sizes were ranged in front of the grand stand.

The first event was an altitude contest for gliders in which Capt. Remy and George Abrial, a Service Technique gliding expert, participated. As the Orly field is perfectly flat, the gliders were launched by means of a motor-car winch gear. Capt. Remy attained some 400 ft. and Abrial 375 ft. before casting off the cables. The glider used was a school machine used in instructing the members of the Avia Gliding Club, of Paris.

In the next event, Capt. Remy, flying a light tourist Caudron biplane, C.60, gave a demonstration of towing a glider—a German glider of the Kassel type, piloted by George Abrial, who remained in the air for 7 min. 15 sec. It is interesting to note that Capt. Remy recently towed Abrial, in this same Kassel glider, over Paris, which was the first demonstration of its kind accomplished in France.

The landing competitions then followed. Pilots were required to "cut off" their motors in the air and glide to the ground, coming to a stop as near a given mark as possible. Both professional and amateur pilots participated in this event, which resulted as follows:—

Professional Pilots.—Detroyat, Morane "Parasol" (230-h.p. Salmson), 32 ft. 6 in.; Lemoine, Potez 36 (95-h.p. Salmson), 43 ft.; Storm, Morane "Parasol" (230-h.p. Salmson), 50 ft.

Amateur Pilots.—Count de Montigny, Morane "Moth" (85-h.p. Gipsy), 75 ft.; de Lamaze, Guerschais (95-h.p. Renault), 130 ft.

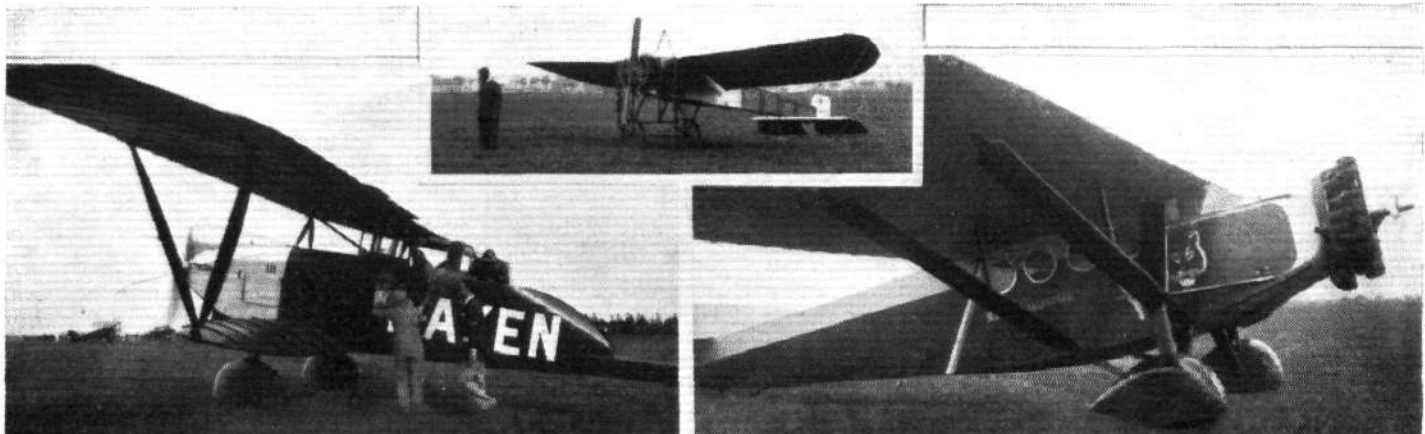


PERSONALITIES AT ORLY: From left to right, Maurice Rossi, Vicomte and Vicomtesse de Sibour, and Lucien Bossoutrot.

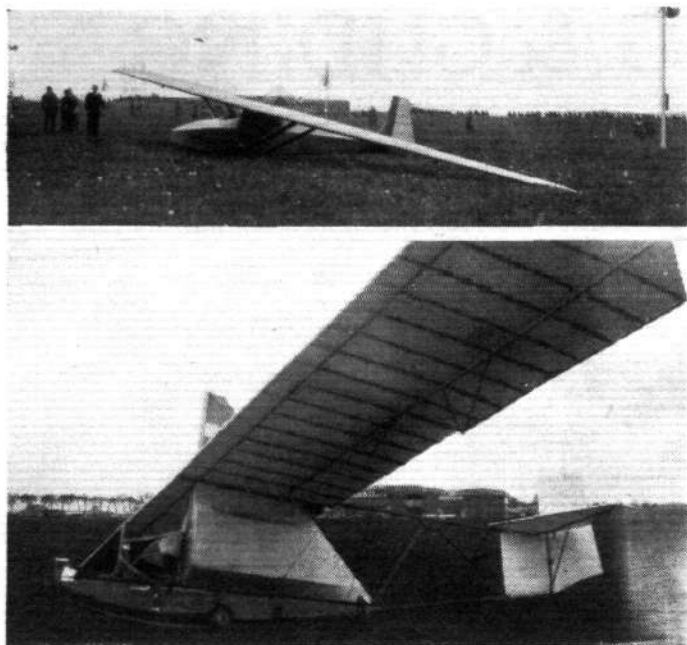
In the afternoon of both days, Marcel Doret, flying his Dewoitine D.27 plane (500-h.p. Hispano Suiza), and Michel Detroyat on his Morane 321 (Gnome & Rhone K.7) gave their usual clever exhibitions of stunt flying; both these pilots were in splendid form and showed that they were none the worse for their last year's accidents. Louis Massote on his new Blériot "Jockey" 917 (500-h.p. Hispano Suiza), George Cavalli on his Gordou Leseure (180-h.p. Hispano) and Rene Paulhan flying his Nieuport (240-h.p. Lorraine) also performed interesting feats.

Several parachutists made jumps from altitudes of about 1,400 ft. and the trapezist, George Vassard, gave a remarkable exhibition of gymnastics on a horizontal bar attached to the under side of a Caudron biplane piloted by Maurice Finat. Among these stunts Vassard, while suspended by his feet, head downwards from the bar, almost touched the ground as the plane flew low in front of the grand stand.

Four well-known French aviatrixes made exhibition flights around the aerodrome on both days. Maryse Hiltz, who recently returned from her flight to Madagascar, flew her Farman 190 plane (230-h.p. Gnome & Rhone "Titan"), and Maryse Bastié her Klemm monoplane (40-h.p. Salmson). Adrienne Boland encircled the field in a Morane "Parasol" plane (230-h.p. Salmson), as did Helene Boucher in her Morane "Moth" (85-h.p. Gipsy).



THREE INTERESTING MACHINES AT ORLY: Top, the Blériot Channel type monoplane as used by Blériot in his Channel flight of 1909. Left, Codos and Robida's Paris-Saigon record Breguet 27. Right, the "Marcel Lalouette" Farman 190 used by Goulette and Salel in their Paris-Cape flight.



GLIDERS AT ORLY: Top, a Kassel glider used by G. Abrial and, below, the Avia school glider, used by Abrial and Remy.

The ancient Blériot plane, equipped with an Anzani 25-h.p. engine, in which Louis Blériot flew across the Channel some 13 years ago, and the Farman "cage a poule" (chicken cage), powered with a Renault 80-h.p. motor, one of the early pioneers in the aeroplane field, also made presentation flights around the field.

Paul Codos and Henry Robida, who made a record flight

of 3 days 5 hr. 40 min. last January from Saigon, Indo-China, to Paris (7,200 miles) in a Breguet 27 Sesqui-plane, 650-h.p. direct-connected Hispano Suiza motor, flew over to Orly in this machine during the first day. The Count Jacques de Sibour, accompanied by his wife, who was Miss Selfridge, of London, also arrived at the meeting in his plane, the well-known Farman 190, equipped with a Gnome & Rhone K.7 engine. The late Capt. Goulette and his pilot, George Salel, who also made a record-breaking flight recently, flying from Paris to Cape Town in 3 days 17 hr. 15 min., likewise visited the Orly meeting in their Farman 190 (300-h.p. Lorraine "Algol"). Capt. Goulette had named his plane the *Marcel Lalouette*, in memory of his late comrade with whom he made a number of long-distance flights.

The meeting terminated with a handicap speed race, Orly-Chartres and return, a distance of some 95 miles. The contestants were divided into professional and amateur classes. The planes were handicapped according to their official performances made when passed by the Service Technique at the Villacoublay Aerodrome, the maximum handicap imposed on the fast machines being some 18 min. The flying time, from the start of the first plane to the finish, was about 50 min., all the machines arriving in fairly close succession.

Seitz, in the Blériot "Spad" 922, finished first in the professional class, Vantorhoudt, a Morane instructor, flying a Morane "Parasol," crossed the line 8 sec. later and Delmotte, in the new Caudron light tourist single-motor cabin monoplane, the "Phalene," followed 5 min. afterwards. Berthelin, in a Lorraine Hanriot training machine, 431, finished fourth, arriving some 2 min. later.

Boudineau, flying a Morane "Moth," finished first in the amateur class, crossing the line some 2 min. after Sietz on the Blériot "Spad." Tersen, in a D.H. "Moth," finished second, arriving 8 min. after Boudineau, and Palayret, flying a Caudron low-wing monoplane, 193, crossed the line 2 min. later, thus finishing third in the amateur class.



Line-up of some of the machines at Orly.

READING

Over 63 hours, mostly on cross-country work, were flown by the pupils of the Phillips & Powis School of Flying last week. Mr. E. B. Whishaw, who learned to fly at the school two years ago, has now returned to complete the necessary hours for his "B" licence. Night flying is still proving a great attraction, and, despite the fact that it is carried on until midnight, when the weather permits, no complaints have been received from the local inhabitants. This is a very gratifying sign, and shows that the pilots take every precaution not to disturb people unnecessarily.

SKEGNESS

Since the club started operations on May 21 last, over 150 hours' instructional flying have been carried out, while some 1,200 passengers have taken joy rides. The regular services to Hunstanton and Nottingham are being well patronised. Mr. A. Henshaw, the first pupil to take his "A" licence, has now, by the purchase of a "Moth," become the club's first private owner. Messrs. E. Longstaff and Grunnill are also nearly ready to take their "A" tests. The next pageant will be held on Saturday and Sunday, July 30 and 31.

MAIDSTONE

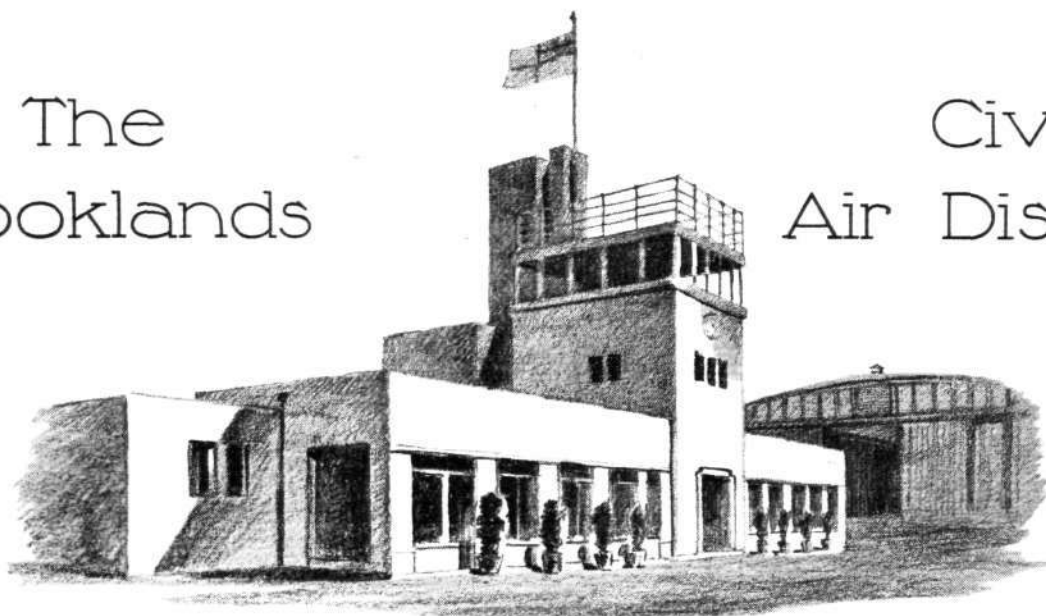
The West Malling aerodrome, together with the Maidstone Aero Club, has been taken over by Land Air & Water Services, Ltd., and under the direction of Count Johnston-Noad will be developed and enlarged. The aerodrome will in future be called the Maidstone Airport, and this company proposes to establish besides a flying school and aero club, a public restaurant, and a dance hall, with full facilities for aircraft overhauls, car maintenance, etc.

AT BROXBOURNE

The Herts and Essex Aeroplane Club have greatly improved their aerodrome at Broxbourne with the addition of some ten acres. They will be having a display on Sunday, June 12, commencing at 2.30 p.m., when all visiting pilots will be welcome. This meeting will be opened by Miss Amy Johnson and Mr. Mollison, and there will be two surprise items on the programme, details of which are not being announced until the last moment. One of the attractions will, it is hoped, be a "Fox Moth," a machine which so many people have heard about but have not yet had the opportunity of seeing. Those who are arriving by air are asked to do so in time for lunch, and certainly not later than 2.15 p.m.

The Brooklands

Civil Air Display



ONCE more the weather sadly interfered with what would have otherwise been a really excellent flying display. The occasion was the display which was staged at Brooklands by Capt. Duncan Davis and his henchmen for the benefit of the Guild of Air Pilots and Air Navigators of the British Empire (commonly referred to as G.A.P.A.N.). Capt. Davis is to be congratulated on his altruistic action, for those in his own particular business—the Brooklands School of Flying—cannot have benefited to any real extent from their vast labours, other than indirectly. We know from our own observations that that labour has absorbed all their energies for a very considerable time past, and that their efforts should culminate on a day when it rained, rained, and then rained again for a change, was a very bitter blow. Naturally, under these conditions the public attendance was meagre, that is, comparatively speaking, but the excellence of the programme and the organisation in general more than compensated for this.

Actually, of course, those privileged ones in the special enclosure which surrounded the new clubhouse were not so badly treated. This new building has been described and illustrated very fully in *FLIGHT* already, and this week our artist has produced a pencil impression of it which shows to advantage its admirable qualities, for the purpose for which it was designed. The long glass-fronted restaurant and lounge served as covered-in grand stands, as did the rooms on the upper floors, and despite the crush, large numbers of people were able to watch the flying in comfort from these vantage points.

The programme should have opened with the start of the London-Newcastle Race, but low cloud south of Cramlington caused this to be abandoned, though not until

the competitors were lined up ready to start. It has now been decided that this race will be held in conjunction with a meeting at Cramlington on Saturday, June 18.

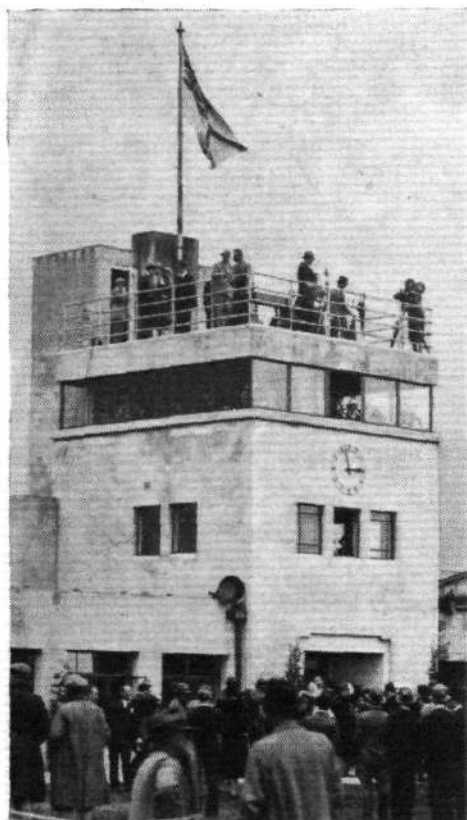
The programme which followed the announcement of this postponement included many items which were among the best we have seen. One of the earliest and, incidentally, most original, was the demonstration of wireless-controlled blind flying given by F/O. S. A. Thorn in the school "Moth." This machine has a Standard wireless receiver and a Reid & Sigrist Turn Indicator, and with the help of these Thorn took off, flew round, turning in all directions, spun, circled the aerodrome, and finally glided in to land; all while under the hood and at the direction of the announcer, Mr. E. C. Brown. A thoroughly convincing performance which showed the advance that has been made in blind flying recently, and which should do a great deal to engender a feeling of safety in the general public as regards flying.

Aerobatics in light aircraft were shown by Flt. Lt. W. E. P. Johnson and Flt. Lt. C. Clarkson. The former in a "Tiger Moth" and the latter in an ordinary "Moth." Both fuel supply systems were fitted for inverted flying, thus adding to the scope of these two well-known pilots. It is asking the impossible to attempt to criticise their displays. Their finish and artistry is now one of the features of all the best of our flying displays as is the *nonchalant* way in which they fly either side up. Both seem to have concentrated on making their manoeuvres as smooth as possible and appeared to wish to outdo each other in the length of time taken to roll the machine. It says a very great deal for the efficacy of the controls that they were able to do this.

Just before 3 p.m. Air Commodore F. E. Guest, the



PERSONALITIES AT BROOKLANDS : On the left is Mr. Geoffrey Linnell—who so successfully organises the Sywell Displays—with Miss Cooper ; in the centre Mrs. Lawrence Wingfield entertains four members of the Siamese Legation while Mr. Wallace Barr stands smilingly in the right background ; on the right Mr. C. H. Roberts—the Principal of the College of Aeronautical Engineering—watches the flying with Miss Roberts. (*FLIGHT Photos.*)



AT THE MICROPHONE: Mr. C. R. Fairey supporting Mr. Siddeley at the official opening of the Display, which it can be seen started punctually at the advertised time of 3 p.m. (FLIGHT Photo.)



ON THE TOP: (Left to right) Mr. A. P. Bradley, manager of Brooklands; Capt. Duncan Davis, responsible for everything, (for this display he was nobly aided by Mr. R. C. Preston as organising secretary); Mr. E. C. Brown, whose excellent announcing played such an important part in the display; and F/O. S. A. Thorn, a popular instructor. (FLIGHT Photo.)

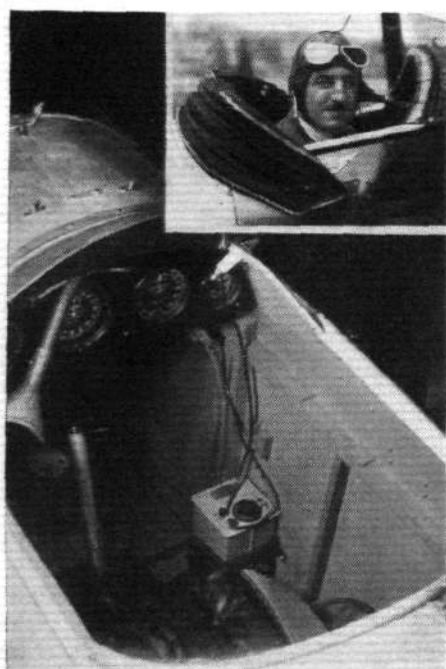
of this our readers have the invariable excellence of all our photographs of Hawker aircraft, an excellence which is in no small measure due to the unerring exactitude with which "George" puts the machine just where our photographer wants it. A manoeuvre of his which was outstanding was a dive followed by two complete upward rolls, finishing off with a loop straight off the continued climb which followed the rolls. Few manoeuvres could demonstrate the high power reserve as well as the cleanliness of the aircraft like this did. Everything in the aerobatic repertoire was shown, including aileron turns on a vertical dive and a prolonged inverted gliding climb after a dive.

Flt. Lt. C. S. Staniland was the next in the air with a Fairey "Firefly" Mk. III. This aircraft, being strengthened for catapult launching and built for deck landing, is somewhat heavier than the standard "Firefly," and Staniland was therefore handicapped to a certain extent, but nevertheless he showed very conclusively that there is little or nothing to choose between the "Fury" and the "Firefly" when handled by such equally expert pilots. The "Firefly" roars more, and therefore gives the uninitiated an impression of greater speed, but it would have to be a very critical and highly-trained observer who would presume to point out the differences in performance of the two. Staniland's display was marred by the "butting-in" of a fleet of Air Union aircraft, composed of two "Golden Ray" machines together with one of their commercial, "Rapid Azur" Breguets such as are used on the Paris-Lyons route, and also one of the Breguet "Tout Acier" long-range bombing type, a civil version of which was flown by Paul Codos and Henri Robida from Hanoi to Paris in 3 days 5 hr. 40 min. early this year. These same pilots were flying this aircraft on Saturday. Staniland's zoom up underneath this latter

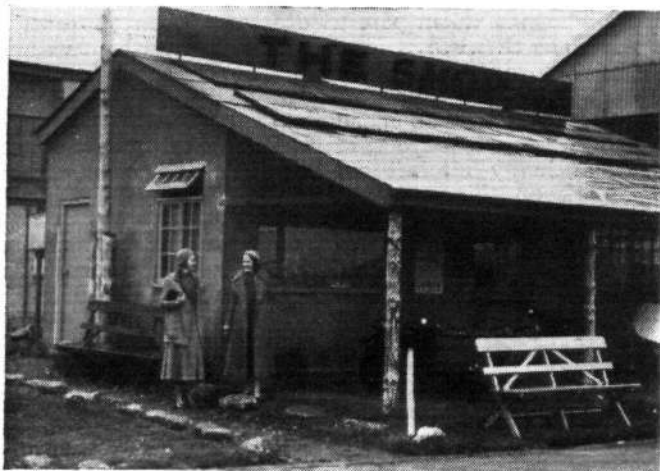
Deputy Master of the G.A.P.A.N., went to the microphone and expressed the regrets of everyone connected with the management for the absence of Lord Londonderry, the Secretary of State for Air. He also read messages from the D.C.A., India, and welcomed to Brooklands Col. and Mrs. Sheldermine, the Director of Civil Aviation, and, among others, Miss Amelia Earhart, whom he announced had been made an Hon. Member of the Guild.

Mr. C. R. Fairey then made a short speech, introducing Mr. J. D. Siddeley, the Chairman of the Society of British Aircraft Constructors, who declared the meeting open in a succinct speech wherein he gave some interesting details of the growth of the Guild.

After Mr. R. A. C. Brie had demonstrated the Autogiro Flt. Lt. P. W. S. Bulman showed off the paces of the Hawker "Fury." "George" Bulman is, of course, one of the finest pilots for this sort of work there is; as witness



THE NEW ITEM: F/O. Thorn's wireless-controlled flying was a feature of the meeting. His Standard wireless receiver is here seen in the cockpit, while above, the arrangement of the hood is shown. On the right Air Commodore Guest stands in the midst of the French visitors, including MM. Codos and Robida; with Mr. Lawrence Wingfield, clerk to the G.A.P.A.N., on the right. (FLIGHT Photos.)



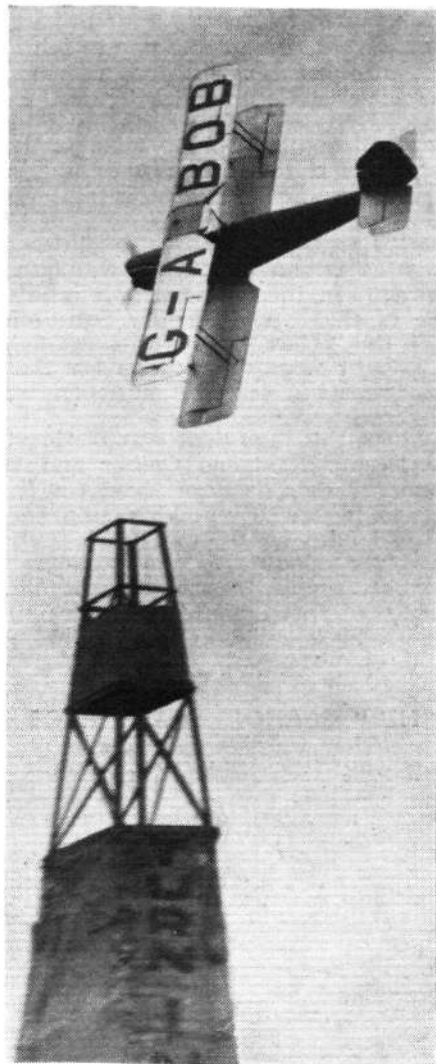
THE SHOP : The Shop which is run by Mrs. Duncan Davis (right) and Miss Winifred Beer (left) is a great attraction at Brooklands, and despite the weather, they are doing a good trade in new models of wearing apparel for both male and female visitors. (FLIGHT Photo.)

Breguet was somewhat hair raising to watch, but one can well understand his feelings at the appearance of these aircraft right in the middle of his display. Why they did not keep to the edge of the aerodrome instead of sailing straight across it we cannot imagine.

A pylon race around the confines of the aerodrome by Col. L. Strange on a "Spartan," Flt. Lt. Clarkson on a "Swift," Mr. Brie on an "Autogiro," and Mr. George Lowdell on a "Moth" showed that there would be something in this form of racing if it were revived with special aircraft for the job. Col. Strange is, of course, one of the old hands at it, and many will remember him at Hendon before the war; it would be interesting to know whether he agrees with the opinion we heard expressed by several other pilots that all the aircraft taking part on Saturday were far too fast for the spectators to get the best out of the race. Slow machines with a flying speed of about 50 m.p.h., and possibly all of the same type, would appear to us to offer the best solution, for, though the race on Saturday was well handicapped and resulted in thrills for the public, it is certain that aircraft like the Comper "Swift" are far too fast to give anyone more than a fleeting glimpse of them. After all, 40 to 50 m.p.h. a few yards away from you and close to the ground can look quite terrific.

After the race there came the *pièce de résistance* in the shape of flight-aerobatics by a Flight from No. 1 (Fighter) Squadron, R.A.F., which is stationed at Tangmere, and is commanded by Wing Com. R. M. Drummond. Flt. Lt. O. E. Carter led the flight and their performance almost beggars description. Several of their manoeuvres we have not seen before, and though we feel that the justification for close-formation flying such as these necessitated, has by no means been proved, yet there is no doubt that they did show up the excellence of the flying of this squadron. The performance of these manoeuvres was undoubtedly helped to a great extent by the fact that they were flying Hawker "Furies." These aircraft with their large speed range and reserve power make formation flying easier than it used to be with the older, less efficient, fighters, but this does not in any way detract from the result. A dive in Vee followed by a half loop with a half roll off the top still in Vee formation, for example, or a dive, zoom and flick loop at the top in same formation, are manoeuvres which must require the greatest exactitude in training.

By way of contrast this display was followed by a parade of some civil aircraft types. These included the Ford (three Whirlwinds), the Spartan "Mailplane" (three Gipsy III's), the Westland "Wessex" (three Genet Majors) and a Lockheed "Vega" (Wasp). These aircraft were flown



ECHOES OF HENDON : Col. L. Strange takes his Spartan "Arrow" round the pylon in the true Hendon style, losing less than anyone on his turns. (FLIGHT Photo.)

round by their respective pilots to show off their different attributes. Demonstrations of commercial aircraft are always hard to make interesting to the general public, and there is little that can be done except to fly round and round; most of them did just this, though why the "Vega" should do so in the reverse direction to the others, against the common rules of the air and to the danger of all, is past comprehension. It did, however, draw attention to the speed of this machine, which is, of course, far and away greater than any commercial aircraft we have as yet flying in this country. Incidentally, before these notes are in print Miss Earhart will probably have



THE EXHIBITION : Many machines and engines were exhibited in the hangars at Brooklands on Saturday; here are seen the latest Hermes II with enclosed valve gear and lacquer finish, and also the "Puss Moth" of the Anglo-American Oil Co. On the right Mr. George Lowdell gets ready for his crazy flying display, one which, incidentally, was as good as any we have seen. (FLIGHT Photos.)



flown this particular "Vega" to Paris, as her own aircraft has been placed on exhibition in Selfridge's.

A duel between Flt. Lts. Bulman and Sayer, both of the Hawker Co., and flying a "Fury" and "Hart" respectively, was not so conclusive as we have seen these same pilots do before. Perhaps they thought that the spectators had had enough of high-speed fighter aircraft, but if they did they were wrong. Their performance did, however, show that in the hands of a really first-class pilot the "Hart," as a two-seater fighter, might well be looked upon as a more formidable weapon than the single-seater fighter. In this connection it is interesting to note that one of the R.A.F. Fighter Squadrons is being equipped with the "Hart" as a two-seater fighter.

A flight of geese which crossed the aerodrome in perfect vee formation, at this time, enlivened the damped spirits of the spectators.

About this time there was the inevitable parachute drop by Messrs. Raymond Quilter and W. A. Fairlie. The former made a delay of about 500 ft. before opening, and landed in the River Wey on a small island, while the latter landed on the race track itself. The public, being morbidly minded, were duly impressed, while the daily Press was able to use scare headlines such as—Narrow Escape of Parachutist.

Mrs. Shelmerdine concluded the meeting by presenting

each pilot who had taken part with a silver cigarette case on behalf of the G.A.P.A.N., a graceful gesture which was gratefully acknowledged by everyone.

The Concours d'Elegance had to be postponed and will be held at a later date. So ended one of the best-run shows we have seen; let us hope that it is repeated next year, and that as many aircraft as were to be seen in the machine park on this occasion will be there again next year.

The parking was carried out down by the side of the sewage farm, where a strong contingent from the Messenger Boys' Flying Club, under Mr. Geoffrey Dorman, assisted the A.A. staff to park the machines. Their assistance must have been a blessing, for over 70 aircraft had to be dealt with!

Later in the evening F/O. H. H. Leech evidently thought that all and sundry were enjoying themselves in the clubhouse too much after their day's work, and so, as a parting gesture, he enticed them out and treated them to a display on the Arrow "Active" before leaving for home. He makes the "Active" do everything that any normal pilot can with a machine, and, moreover, does it in a fashion which it looks as if he had far more power at his command than he has. It was a very pretty finale, though we do wish he would allow himself a little more room at the bottom of his power dives when he pulls out.

THE "MORNING POST" RACE

Below we give a further table of the results of this race which was held from Heston on Saturday, May 21.

This time we have been able to analyse the times for the various legs of the whole course; these should be studied in conjunction with map on page 463 last week:—

Aircraft.	Engine.	Registra- tion Letters	Pilots.		1st Leg.		Aver- age speed.	2nd Leg.		Aver- age speed.	3rd Leg.		Aver- age speed.	Final Place.	
(In order of leaving Heston.)						Arrive Norwich from Heston.		Arrive Norwich from Norwich.		Arrive Heston from Norwich.					
Redwing	Genet II	AAUO	H. E. S. Pritchett	1	h. m. s.	m.p.h.	h. m. s.	m.p.h.	h. m. s.	m.p.h.				Disqualified	
Avian	Cirrus III	AAGR	E. Cohen	4	1 02 04	67.8	4 00 07	72.0	7 24 27	59.7					
Moth	Gipsy I	AAKI	R. L. Bowes	8	2 02 34	59.0	4 41 05	85.2	7 22 50	82.7				12	
Moth	Gipsy I	AAJY	Miss Sale-Barker	7	retired.									3	
Moth	Gipsy I	EBYH	G. Baillie	2	1 02 38	91.0	3 42 00	84.5	6 20 07	85.5					
Spartan Arrow	Gipsy II	ABOB	G. H. Stainforth	15	1 47 41	65.5	5 01 24	64.2	7 47 51	79.2				13	
Moth	Gipsy I	ABER	W. R. Walwin	12	1 07 15	90.0	4 17 18	66.0	7 11 52	74.2				11	
Moth	Gipsy I	AAKC	K. Crossley	5	1 21 28	80.7	3 59 56	85.2	6 55 56	73.2				9	
Avian	Hermes II	ABDP	J. E. Shaw	20	retired—forced landing near Leighton Buzzard.										14
Moth	Gipsy I	ABAF	M. Hachisuka	10	2 08 24	59.7	4 58 45	76.7	8 03 30	68.5					
Avian	Genet Major	ABUN	C. F. Almond	25	1 46 56	69.2	4 42 44	73.5	retired.					2	
Civilian Coupé	Genet Major	ABNT	L. S. Dawson	17											
Moth	Gipsy I	ABPK	C. H. Tutt	14	1 40 31	74.0	retired.							6	
Moth	Gipsy I	ABAS	L. Lipton	11	2 11 17	62.2	retired.								
Spartan 3-str.	Gipsy II	ABTT	F. G. Gibbons	3	1 21 45	91.5								Disqualified 10	
Avian	Hermes II	ABCD	N. A. Borett	23	retired.										
Widgeon	Hermes II	EBRN	H. R. Law	22	retired.									2	
Moth	Gipsy I	AAJP	J. Grierson	6	1 20 43	98.0	3 53 13	90.0	6 18 24	97.0					
Moth	Gipsy II	ABBX	C. Clarkson	18	1 28 58	93.0	4 08 05	84.7	6 40 28	90.2				6	
Moth	Gipsy II	AAZE	A. M. Jackaman	19	1 22 18	104.0	3 47 26	97.0	6 25 11	85.7				Disqualified 10	
Bristol Fighter	Hispano Suiza	EBIO	D. V. Ivins	21	1 42 13	94.0	4 38 45	73.0	7 11 05	90.2					
Martlet	Gipsy I	EAYZ	H. A. Edwards	26	1 40 36	101.5	retired.							5	
Swift	Pobjoy " R "	ABUA	Miss Crossley	27	retired.										
Swift	Pobjoy " R "	ABPR	H. Bailey	29	1 45 15	103.3	4 08 21	99.2	6 30 32	100.0				7	
Swift	Pobjoy " R "	ABJR	H. C. Mayers	28	1 48 10	103.5	4 10 27	97.0	6 44 16	89.0					
Puss Moth	Gipsy III	ABWA	F. R. Walker	32	1 35 30	115.5	3 50 06	109.0	6 11 12	101.5				1	
Puss Moth	Gipsy III	ABLY	Lord Grimthorpe	31	retired.									4	
Puss Moth	Gipsy III	ABMS	H. G. Selfridge	33	1 45 05	110.0	4 07 18	100.0	6 27 10	103.0					
Puss Moth	Gipsy III	AAXM	Miss Spooner	34	1 40 01	119.0	3 45 40	122.0	6 20 09	88.5				Disqualified 8	
Tomtit	Mongoose III	AALL	E. T. Edwards	24	2 03 35	101.7	4 24 00	102.2	6 46 54	99.5					

NEWCASTLE AERO CLUB

Bad weather caused the London-Newcastle race and also the meeting which was being held at Cramlington to be cancelled on Saturday, May 28, but the dinner which was to follow the meeting was held, despite this setback. The Lord Mayor and Sheriff of Newcastle-upon-Tyne, Dr. W. J. Leech, M.P., and Alderman David Adams, were among the well-known people to attend this. After discussion it was decided to hold the race and a meeting on Saturday, June 18, but this has now been definitely abandoned.

GLIDING IN NORTHERN IRELAND

The Ulster Gliding and Aviation Club has made considerable progress since it commenced operations with one glider last year. Several members, including a lady, have qualified for their "A" certificates at the club's field at Doagh, County Antrim, but this year activities are being transferred to Tyrella, County Down, some six miles south-west of Downpatrick. A second glider has been

added to the club equipment and a sailplane is in course of construction. Capt. R. L. Henderson, the President, recently broadcast a very interesting talk on gliding from the Belfast studio of the B.B.C.

DONCASTER

The Armthorpe Aerodrome, which is four miles north-east of Doncaster and $\frac{3}{4}$ mile north of Armthorpe, is now rapidly approaching completion, and will, it is hoped, be ready for Sir Alan Cobham to hold his National Aviation Day on June 16. The occasion will also be the official opening of the aerodrome, where all facilities will be provided for visiting aircraft. The Doncaster Aviation Co. have taken delivery of a "Puss Moth" which is for the present being used at Bawtry, the aerodrome of Mr. Harold Peake.

LIGHT PLAINS

LARGE-LETTERED notice in a Kentish meadow: "Tea Gardens. Good Landing for Light Plains." Enterprise and erudition are not always wedded.—Morning Post.

ROLLASON, MUIR & RICKARD

A new school is being opened at the Ford Aerodrome at Bognor by the firm of Rollason, Muir & Rickard, who are so well known for the flying instruction they have been giving at Croydon. They will also be opening a club at Ford under the name of the South Downs Aero Club. The official date of opening will probably be June 4, and from that date on full club facilities will be available.

BRISTOL

Pilots who visit the Bristol Airport for the Summer Flying Meeting on June 4 are particularly requested to arrive before 2 p.m., and further to assist the organisers by delaying their departure until 5.30 p.m., when the display programme will be finished. Permission to take off must be obtained from the control tent before leaving. In the evening there will be a dance at the Grand Hotel at 8.45 p.m., and visitors arriving by air will be the guests of the Bristol & Wessex Aeroplane Club. The following

entrants have been received for the Air League Challenge Race, which will be flown on the same day:—

Aircraft	Engine	Entrant	Pilot
Parnall Elf	Hermes ..	Geo. Parnall & Co., Ltd. ..	N. Edgar.
Desoutter	Hermes ..	Phillips & Powis, Ltd. ..	S. Cliff.
Moth ..	Gipsy II ..	C. Nasmyth Shaw ..	C. N. Shaw.
Moth ..	Gipsy I ..	Bristol & Wessex Ae.C. ..	W. N. Cope.

SCARBOROUGH

The Scarborough Aero Club has now received a licence for its new aerodrome at Heslerton, which is on the Scarborough-Malton Road. This is a better aerodrome than previously used, and with the new facilities for instructional flying it is hoped that the club will be able to increase its activities.

THE CHALLENGE DE TOURISME INTERNATIONAL

67 Entries for International Light Plane Contest

THE international light plane contest, which is again being organised by the German Aero Club, has drawn 67 entries, 32 from Germany, 12 from France 8 from Italy, 7 from Czecho-Slovakia, 6 from Poland and 2 from Switzerland. On the German side starts this time John E. Carberry in a new Klemm with "Gipsy" engine, and on the Italian, Miss E. W. Spooner in a Breda 33 with 120-h.p. "Gipsy" engine.

Among the German entries are a number of very interesting new planes. A cigarette factory has entered three tailless machines built in the workshops of the famous German pilot Fieseler, and each powered with two 75-h.p. Pobjoy "R" engines. Eight new Heinkel monoplanes, six new Messerschmidt, seven new Klemm with various types of engines and three new Papenmeyer with 75-h.p. Pobjoy "R" engines are amongst these. The Ernst Heinkel Company has for the first time entered on the production of light planes. Also Papenmeyer appears in public for the first time. He formerly worked together with the well-known young Hamburgian light plane constructor, Bäumer, who a couple of years ago became the victim of a fatal air accident.

The Italians have exclusively entered Breda 33 planes with 130-h.p. S/63 Colombo engines, while the Poles have three PZL.19 with 120-h.p. "Gipsy" and three RWD.6 with 140-h.p. "Genet" engines. The Czecho-Slovakians intend coming with a Breda 15.S having a 120-h.p. Walter "Junior" engine, three Praha BH.111 with "Gipsy III" engines, an L.4 with 100-h.p. Walter and an L.5 with Michl "Orion" 50-h.p. engine, as well as a B.P.5 having Walter MZ 50-h.p. motor.

The French entries comprise a Guerschais T.9 with 100-h.p. Renault, two Potez with 100-h.p. Potez engines, two Caudron "Luciole," one with a 135-h.p. Salmson, the other with a 120-h.p. Lorraine-Dietrich motor, a Maubousin M.II with 40-h.p. Salmson, two Farman 234 with 95-h.p. Salmsons, a Farman 350 with 120-h.p. "Gipsy," two Marcel Bloch 90 with 115-h.p. Renault engines.

Switzerland is to be represented by a new Klemm and an AC 12.E, both with 120-h.p. "Gipsy III" engines.

Germany is not only starting with new planes, but also has several new engines "up her sleeve," so to speak.

There is a new 8-cylinder Hirth of 160 h.p., a new Argus of 140 h.p. and a new Siemens of 135 h.p. Further competitors on the German side are the Japanese Hachisuka with a "Gipsy Moth" and the Darmstadt College of Engineering with its own machine, while a Roumanian, M. Alex. Papana, of Bucharest, intends starting with a "Monocoupe" 110 having a 110-h.p. Warner "Scarab" motor.

On the whole the competition will be handled on similar lines as the last one in 1930. The organisers have expressed deep regret at Great Britain not taking part this time. On the other hand, they welcome back the Italians in the ranks of the competitors. The technical tests will not take place before August 11 on the aerodrome at Berlin-Staaken. The tests will be extended by the addition of a slow-speed travelling trial and for the fuel consumption test the speed will be considered in the rating to prevent pilots going too slowly. The number of points to be awarded for these technical tests will be practically the same as that which can be gained by the competitors during the air tour. The latter will start at Berlin-Tempelhof and finish on August 27 at Berlin-Staaken. Next day an air race will be held over a triangular course 187 miles long, in which the fast machines will be able to make an extra number of points. This also is an innovation.

The air tour will start at Berlin-Tempelhof, as already indicated, and the first main stage, for which two days are available, will lead to Rome via Warsaw, Krakow, Praha, Brünn (in Czecho-Slovakia), Vienna, Zagreb, Postumia, Vicenza and Rimini. The next main stage, also two days' travel, goes on to Paris over Firenze, Bellinzona, Torino, Albenga, Imperia, Cannes, Lyon, St. Gall, Stuttgart and Bonn. Paris will be reached on August 24, and the 25th will be a day of general rest. The last main stage will pass over Deauville, Rotterdam, Dortmund, Hamburg, Copenhagen, Laholms Bay, Göteborg, Laholms Bay, Copenhagen, Hamburg to Berlin-Staaken. There will be about 26 compulsory stops *en route*. The total distance to be covered is about 4,660 miles, fairly evenly distributed over the three main stages. On the average each machine will have to cover slightly more than 750 miles per day.

E. P. A. H.

Air Service Training, Ltd.

THE training provided at Hamble by A.S.T. has proved to be a great attraction to pupils all over the world. This particularly applies to the Instrument Flying Course, and in this connection it is worth noting that Lts. Potamiamos and Platsis, of the Greek Naval Air Service, have obtained the highest marks yet awarded to anyone for this course. Other officers undertaking similar training recently came from Finland, Norway and Siam, while that well-known sportsman, Mr. Brett, from Cannes, is also doing likewise. Mr. Lee Murray, who has recently returned from Australia, has been placed in the highest category after completion of his Flying Instructor's Course. The Instructor's Course is, incidentally, the same as that obtainable at the C.F.S., and close liaison is being maintained between the C.F.S.

and A.S.T. in order to maintain an equal standard. A new and very complete wireless station will shortly be installed at the school for the purpose of instruction and also of wireless communication between air and ground; pupils will thereby be able to qualify for the Postmaster-General's W/T. air operators' licence. One of the courses which has attracted a large number of pupils is that designed for the beginner who wishes to take up aviation as a profession. This course lasts from two to three years and includes such subjects as Theory of Flight, Airman-ship, Rigging, Technical and Practical Navigation, Engineering, Meteorology and foreign languages. Such facts would appear to justify the words of the Duke of Gloucester who, when performing the opening ceremony last June, said the school approached a university status.

THE ROYAL AERO CLUB OF THE UNITED KINGDOM

OFFICIAL NOTICES TO MEMBERS

REPORT of the Racing Committee of the Royal Aero Club, held at 119, Piccadilly, W.1, on Thursday, May 26.

Present.—W. Lindsay Everard, M.P., in the Chair; Flt. Lt. D. W. F. Bonham Carter, Lt. Col. W. A. Bristow, Maj. A. Goodfellow, Col. F. Lindsay Lloyd, C.M.G., C.B.E., Wing Com. H. M. Probyn, D.S.O. In attendance, Capt. W. Dancy (Handicapper); H. E. Perrin (Secretary).

Chairman.—Mr. W. Lindsay Everard was unanimously elected Chairman of the Racing Committee for the year 1932.

King's Cup Air Race.—Supplementary Regulations, together with the arrangements for the Controls and Turning Points, were approved.

Society of British Aircraft Constructors' Challenge Trophy.—The Rules to govern the Race for the Challenge Trophy and prizes, amounting to £75, presented by the Society of British Aircraft Constructors, to be held at Portsmouth Municipal Aerodrome on July 2, 1932, were approved.

Grosvenor Challenge Cup.—The Rules to govern the Grosvenor Challenge Cup, presented by the late Lord Edward Grosvenor, to be held at Portsmouth Municipal Aerodrome on July 2, 1932, were approved.

Gliding Certificates.—The following Gliding Certificates, announced at the last meeting but crowded out from our last report, have been granted:—

"A" CERTIFICATES				
270	Lionel Carless Dugdale ..	Kent G.L.C. ..	14.6.31	
271	Sheila Macdonald Green ..	B.A.C. School of Auto- Towing	13.3.32	
272	John Grimston ..	London G.L.C. ..	6.3.32	
273	Malcolm Vyvyan Laurie ..	London G.L.C. ..	19.3.32	
274	John Patrick Dewsbery ..	London G.L.C. ..	31.1.32	
275	John Stanley Sproule ..	York G.L.C. ..	13.3.32	
276	Colin Brook Walthew ..	Preston & District G.L.C. ..	22.11.31	

"B" CERTIFICATES				
233	Albert Whitehead ..	Preston & District G.L.C. ..	13.3.32	
179	Richard Edgar Sharples ..	Preston & District G.L.C. ..	13.3.32	
266	Francis Brian Thomas ..	London G.L.C. ..	20.3.32	
246	Audrey Mary Churchill ..	London G.L.C. ..	20.3.32	
269	George Eric Collins ..	London G.L.C. ..	20.3.32	
193	Albert Louis Slater ..	London G.L.C. ..	20.3.32	
274	John Patrick Dewsbery ..	London G.L.C. ..	5.3.32	
273	Malcolm Vyvyan Laurie ..	London G.L.C. ..	3.4.32	
78	Charles Edward Turner ..	York Group ..	3.4.32	
250	William Donald MacClement ..	London G.L.C. ..	2.4.32	

"C" CERTIFICATES				
274	John Patrick Dewsbery ..	London G.L.C. ..	6.3.32	
129	Leonard Ernest Falla ..	Preston & District G.L.C. ..	28.3.32	

King's Cup Air Race.—The attention of competitors is drawn to the following Supplementary Regulations:—

Course (Abingdon Turning Point).—The R.A.F. Aerodrome, which is the turning point, is situated 1½ miles N.W. by N. of Abingdon. The distance from Brooklands to Abingdon is 43½ miles and from Abingdon to Shoreham 73½ miles.

Starting at Brooklands (Section I).—The order of starting from Brooklands in Section I on Friday, July 8, 1932, will be announced later.

Section II.—Competitors will be started from Brooklands in Section II on Saturday, July 9, 1932, in accordance with the proportion of their handicap allotted for that Section, plus or minus the time gained or lost on their handicap in Section I.

Weather Reports.—Weather reports will be available at the Controls, namely:—Brooklands, Bristol (Whitchurch), and Leicester (Ratcliffe).

Shed Accommodation at Brooklands.—Shed accommodation will be available at Brooklands for all competing aircraft.

Pilot's Risks.—Once the Race has commenced on each day, the departure of competitors from Controls will not be delayed or stopped by the Officials on account of weather conditions. Competitors must therefore at each Control study the weather reports and make their own decision as to whether they will proceed in the Race.

Meetings at Portsmouth.

Society of British Aircraft Constructors' Challenge Trophy.—(Under the Competition Rules of the Royal Aero Club and the F.A.I.)

Prizes: 1st, £50; 2nd, £15; 3rd, £10 (presented by the Society of British Aircraft Constructors).

A Handicap Race open to all recognised Light Aeroplane Clubs.

Aircraft must be of British manufacture and pilots must be British subjects.

The aircraft entered must be the *bona fide* property of the Club or of a member of the Club entering, and, in the latter case, the owner must be the pilot.

Pilots must have been trained *ab initio* by the Club entering.

Grosvenor Challenge Cup.—Presented by the late Lord Edward Grosvenor (under the Competition Rules of the Royal Aero Club and the F.A.I.).

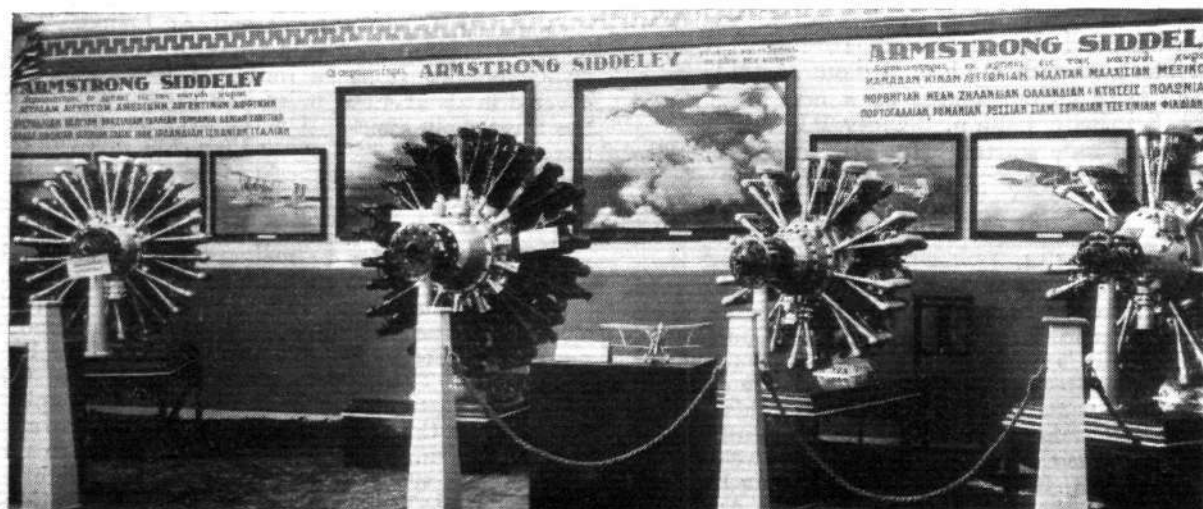
A Handicap Race open to aircraft the weight empty of which, as shown on the Certificate of Airworthiness, must not exceed 1,500 lb.

The aircraft must be of British manufacture and the pilots must be British subjects.

These Races will take place at Portsmouth on Saturday, July 2, 1932, on the occasion of the official opening of the Portsmouth Municipal Aerodrome.

All inquiries as to Regulations and Entry Forms, etc., must be made to Capt. R. H. Stocken, Air Pageant Manager, Guildhall, Portsmouth.

Offices: THE ROYAL AERO CLUB,
119, PICCADILLY, LONDON, W.1.
H. E. PERRIN, Secretary.



AT THE ATHENS AERO SHOW: The Armstrong-Siddeley exhibit at the recent International Aero Show at Athens.

AIR TRANSPORT

EUROPEAN AIR TRANSPORT OPERATIONS IN 1931

IN the Résumé of Commercial (Aviation) Information, compiled by the Directorate of Civil Aviation (C.A.3) and just issued by the Air Ministry, an interesting table is included in Appendix I which shows the returns of the various European Air Transport companies. The information contained in this table, which is for the period ending December 31, 1931, is very complete, and serves as an interesting comparison in con-

densed form of the activities of the various aircraft operating concerns. We therefore publish this table below, but regret that owing to pressure on our space we cannot amplify it with the additional detailed information given in the other sections of the Résumé. We have, however, compiled from these statistics a list of the types of aircraft employed by the various companies, which we think will prove of considerable interest.

Country	Company*	Total Aircraft	Grand Total Pay Load (lb.)	Average Pay Load (lb.) per machine	Grand Total H.P.	Average H.P. per machine	Average Pay Load (lb.) per H.P.	Personnel		Route Mileage 1931	Scheduled Weekly Mileage	Average Weekly Mileage per machine
								Total	Pilots			
GREAT BRITAIN	IAL	32	155,467	4,858	46,360	1,448.8	3.4	65	35	7,764	34,988	1,093
AUSTRIA	OLAG	10	13,368	1,337	5,425	542.5	2.5	18	10	2,553	18,820	1,882
BELGIUM, Europe	SABENA	29	62,575	2,158	18,540	639.3	3.4	22	12	1,117	22,810	787
		17	41,871	2,463	11,580	681.6	3.6	9	4	1,670	2,505	147
CZECHOSLOVAKIA	CLS	14	25,560	1,826	8,100	578.6	3.2	13	7	1,283	10,228	731
		18	27,280	1,515	7,610	423.8	3.6	18	10	758	2,304	128
DENMARK	DDL	5	7,700	1,540	1,865	373.0	4.1	7	3	840	7,880	1,576
FRANCE	AU	40	59,280	1,482	29,450	736.1	2.0	63	30	1,621	25,450	636
	CIDNA	38	62,391	1,642	17,940	472.1	3.5	31	19	2,559	25,500	671
	SGTA	21	39,200	1,866	12,010	571.4	3.3	19	12	1,870	11,930	568
	AO	27	48,540	1,798	21,530	797.4	2.3	52	15	7,500	15,000	555
	CGA	83	87,364	1,052	41,900	504.8	2.1	411	46	6,023	23,942	286
		60	74,526	1,242	27,550	459.1	2.7	98	13	3,609	7,218	120
GERMANY	DERULUFT	11	16,456	1,496	4,600	418.2	3.5	21	11	2,317	37,511	3,410
	DV	21	20,310	967	4,426	211.7	4.6	46	16	1,525	20,172	961
	DLH	145	290,456	2,003	79,965	551.5	3.6	202	133	14,278	241,692	1,667
GREECE	SHCA	3	6,882	2,294	2,475	825.0	2.8	12	4	378	3,378	1,126
HUNGARY	MLRT	6	15,045	2,334	4,050	630.0	3.7	30	15	420	5,170	862
ITALY	SAALI	8	17,640	2,205	6,000	750.0	2.9	13	5	1,023	6,660	832
	SANA	15	34,731	2,315	16,800	760.0	2.1	60	23	2,554	16,966	1,131
	SISA	15	22,950	1,530	10,300	686.6	2.2	19	7	879	10,548	703
	SAM	23	31,551	1,372	11,990	521.3	2.6	30	16	3,833	24,076	1,047
	SAAEI	16	34,550	2,159	15,100	943.8	2.3	21	10	1,194	2,388	149
YUGO-SLAVIA	AEROPUT	7	6,165	881	3,420	488.4	1.8	12	4	1,320	8,912	1,273
NETHERLANDS	KLM	26	64,875	2,495	19,625	754.8	3.3	53	23	10,310	43,070	1,657
	KNILM	9	22,581	2,509	7,305	811.7	3.1	16	7	2,040	12,414	1,379
POLAND	LOT	31	46,820	1,510	16,110	519.4	2.9	36	20	3,061	23,874	770
SPAIN	CLASSA	9	18,733	2,081	7,630	881.1	2.5	23	8	562	7,868	874
SWEDEN	ABA	8	11,272	1,409	4,480	560.0	2.5	19	9	1,040	13,920	1,615
SWITZERLAND	SWISSAIR	13	24,806	1,908	8,360	643.1	3.0	25	10	2,700	16,904	1,300
	ALPAR	3	2,858	952	590	196.2	4.8	—	3	265	3,564	1,188

* The names in full of the various operating companies are as follows:—
 ABA.—Aktiebolaget Aerotransport. AEROPUT.—Društvo za Vazdušni Saobraćaj A.D. (Aeropot). ALPAR.—Société d'Aviation "Alpar Bern".
 AO.—Compagnie Air Orient. AU.—Air Union. CIDNA.—Compagnie Internationale de Navigation Aérienne. CGA.—Compagnie Generale Aeropostale. CLASSA.—Concessionaria de Lineas Aereas Subvencionadas S.A. CLS.—Ceskoslovenska Letecke Spolecnost. CSA.—Ceskoslovenske Statni Aerolinie. DDL.—Danske Luftfartsselskab. DERULUFT.—Deutsche Russische Luftverkehrs-Gesellschaft. DLH.—Deutsche Luft Hansa. DV.—Deutsche Verkehrsflug. IAL.—Imperial Airways, Ltd. KLM.—Konin-

klijke Luchtvaart Maatschappij. KNILM.—Koninklijke Nederlandsch-indische Luchtvaart Maatschappij. LOT.—Polskie Linie Lotnicze. MLRT.—Magyar Legiforgalmi RT. OLAG.—Österreichische Luftverkehrs A.G. SAAEI.—Società Anonima Aero Espresso Italiana. SAALI.—Società Anonima Avio Linee Italiane. SABENA.—Société Anonyme Belge d'Exploitation de la Navigation Aérienne. SAM.—Società Aerea Mediterranea. SANA.—Società Anonima Navigazione Aerea. SGTA.—Société Generale de Transport Aériens. SHCA.—Société Hellenique de Communications Aériennes. SISA.—Società Italiana Servizi Aerei. Swissair.—Société Anonyme Suisse pour la Navigation Aérienne.

TYPES OF AIRCRAFT EMPLOYED

Great Britain.—2 Armstrong Whitworth "Argosy 1A" (3 420 Armstrong Siddeley "Jaguar VIA"). 3 Armstrong Whitworth "Argosy II" (3 420 Armstrong Siddeley "Jaguar VIAA" Civil). 2 Handley Page W10 (2 440 Napier "Lion"). 4 Handley Page 42 (Eastern) (4 490 Bristol "Jupiter XIE"). 4 Handley Page 42 (Western) (4 555 Bristol "Jupiter XFBM"). 1 De Havilland 50 (1 240 Armstrong Siddeley "Puma"). 6 De Havilland 66 (3 425 Bristol "Jupiter VI"). 4 Short "Calcutta" (S) (3 485 Bristol "Jupiter XIF"). 3 Short "Scipio" (S) (4 555 Bristol "Jupiter XFBM"). 1 Westland Wessex IV (3 140 Armstrong Siddeley "Genet Major"). 2 Avro X (3 215 Armstrong Siddeley "Genet Major"). 2 Avro X (3 215 Armstrong Siddeley "Lynx IVC").

Austria.—1 Junkers G31 (3 480 "Jupiter" Gnome et Rhone). 2 Junkers G24 (3 310 Junkers L5). 6 Junkers F13 (1 310 Junkers L5). 1 Junkers A20 (1 265 Junkers L2).

Belgium (Europe).—17 Fokker FVIIb. 3m. (3 230 Gnome et Rhone "Titan"). 3 Handley Page W8F (1 360 Rolls Royce "Eagle IX" and 2 240 Armstrong Siddeley "Puma"). 3 Handley Page W8B (2 355 Rolls Royce "Eagle VIII"). 4 Westland Wessex IV (3 140 Armstrong Siddeley "Genet Major"). 2 Fokker FII (1 240 Armstrong Siddeley "Puma"). (Congo) 6 Fokker VIIb. 3m. (3 230 Gnome et Rhone "Titan"). 8 Handley Page W8F (1 360 Rolls Royce "Eagle IX" and 2 240 Armstrong Siddeley "Puma"). 3 De Havilland 50 (1 240 Armstrong Siddeley "Puma").

Czechoslovakia.—3 Fokker FVIIb. 3m. (3 210 Skoda Wright "Whirl wind"). 2 Fokker FVIIb. 3m. (3 240 Walter "Castor"). 3 Fokker FVIIb. 3m. (3 250 Skoda Dr 14). 2 Fokker FVIIa. (1 420 Walter "Jupiter IV"). 4 Avia BH25 (1 420 Walter "Jupiter"). 7 Aero 35 (1 240 Walter "Castor"). 3 Aero 38 (1 420 Walter "Jupiter IV"). 5 Fokker Avia FVII (3 240 Walter "Castor"). 1 Smolik S.32 (3 145 Walter "Mars"). 1 Caproni C.A. 97 (3 145 Walter "Mars"). 1 B.F.W. 18s (1 200 Isotta Fraschini V 6).

Denmark.—4 Fokker FVIIa. (1 440 Bristol "Jupiter VI"). 1 Desoutter Mk. II (1 105 De Havilland "Gipsy III").

France.—2 Aero 38 (1 420 Gnome-Rhone "Jupiter"). 6 Bernard 190 (1 420 Gnome-Rhone "Jupiter"). 14 Breguet 280T (1 500 Renault). 2 Breguet 280T (1 580 Hispano). 22 Cams 53 (S) (2 103 Hispano). 3 Cams 58 (S) (2 480 Gnome-Rhone "Jupiter"). 6 Farman 170 (1 500 Farman). 14 Farman 190 (1 230-40 Gnome-Rhone "Titan"). 6 Farman 301 (3 230 "Salomon"). 3 Farman 303 (3 240 Gnome-Rhone "Titan"). 2 Farman 305 (3 380 Gnome-Rhone "Jupiter"). 2 Farman 306 (3 240 Lorraine). 6 Fokker FVIIa (1 420 Gnome-Rhone "Jupiter"). 11 Fokker FVIIb. 3m. (3 230-300 Gnome-Rhone "Titan"). 46 Laté 25 (1 450 Renault). 48 Laté 26 (1 450 Renault). 48 Laté 28 (1 500 Renault or Hispano). 2 Laté 32 (S) (2 500 Hispano). 2 Liore et Olivier 13 (S) (2 180 Hispano). 3 Liore 198 (Amp) (1 450 Renault). 13 Liore H 199 (2 450 Renault). 5 Potez 25 (1 450 Lorraine). 6 Potez 29 (1 420 Gnome-Rhone "Jupiter"). 1 Potez 29 (1 450 Lorraine).

11 Potez 31 (1 230 "Salmson AB9"). 2 Wibault (3 300 Gnome-Rhone "Titan").

Germany.—13 BFW M18b (1 125 Siemens SH12). 3 BFW M18d (1 432 Walter "Jupiter"). 1 BFW M18d (1 300 Wright "Whirlwind"). 1 BFW M24b (1 525 Pratt & Whitney "Hornet"). 27 Dornier "Merkur" (1 500 BMW VI). 6 Dornier Wal (S) (2 500 BMW VI). 1 Dornier Wal (S) (2 450 Siemens "Jupiter"). 2 Dornier Super Wal (4 500 Siemens "Jupiter VIII"). 10 Focke Wulfe Mowe A17A (1 520 "Jupiter Getriebe"). Focke Wulfe Mowe A29 (1 500 BMW VII). 4 Focke Wulfe Mowe A 38 (1 520 Siemens "Jupiter"). 2 Focke Wulfe A32 (1 280 Junkers L5). 1 Focke Wulfe A20 (1 120 Mercedes Benz D-11a). 12 Fokker F11 (1 320 BMW VA). 8 Fokker F111 (1 320 BMW VA). 1 Heinkel 158 (S) (1 450 Pratt & Whitney "Hornet"). 1 Heinkel 12 (S) (1 450 Pratt & Whitney "Hornet"). 37 Junkers F13 (1 275 Junkers L5). 9 Junkers F24K (1 500 BMW VI). 9 Junkers W33 (1 300 Junkers L5). 8 Junkers G24 (3 275 Junkers L5). 2 Junkers G31 (3 450 Pratt & Whitney "Hornet"). 1 Junkers G31 (3 450 Siemens "Jupiter"). 1 Junkers G38 (2 400 Junkers L8 and 2 800 Junkers L88a). 11 Rohrbach "Roland" (3 320 BMW VA). 4 Rohrbach "Roland" (3 300 Junkers L5).

Greece.—3 Junkers G24 (3 275 Junkers L5).

Hungary.—2 Fokker VIIa (1 450 Gnome-Rhone "Jupiter"). 3 Fokker FV111 (2 450 Gnome-Rhone "Jupiter"). 1 Fokker FXI (1 450 Gnome-Rhone "Jupiter").

Holland.—1 Fokker 11 (1 180 Armstrong Siddeley "Puma"). 9 Fokker FVIIa (1 450-80 Gnome-Rhone "Jupiter"). 6 Fokker FVIIb 3m (3 230 Gnome-Rhone "Titan"). 5 Fokker FVIIb 3m (3 225 Armstrong-Siddeley "Lynx"). 5 Fokker FVIII (2 450 Gnome-Rhone "Jupiter"). 1 Fokker FIX (3 500 Gnome-Rhone "Jupiter"). 7 Fokker FXII (3 425 Pratt & Whitney "Wasp"). 1 Koolhoven FK40 (1 230 Gnome-Rhone "Titan").

S — Seaplane.

Italy.—1 BFW M18b (1 200 Isotta Fraschini V6). 8 Cant 10 (S) (1 500 Isotta Fraschini). 7 Cant 22 (S) (1 500 and 2 200 Isotta Fraschini). 21 Dornier Wal (S) (2 450 Siemens "Jupiter"). 3 Dornier Super Wal (S) (4 500 Siemens "Jupiter VIII"). 5 Fokker VIIb 3m (3 220 Armstrong Siddeley "Lynx"). 3 Fokker VIIb 3m (3 300 Wright "Whirlwind"). 1 Hamilton H47 (1 500 Pratt & Whitney). 13 Junkers F13 (1 500 Pratt & Whitney, 500 Fiat, 320 BMW VA, and 275 Junkers L5). 4 Junkers F24 (2 275 Junkers L5). 10 Savoia S 55 (S) (2 500 Isotta Fraschini). 1 Savoia S71 (S) (3 240 Walter "Castor").

Jugo-Slavia.—6 Potez 29 (1 450 Lorraine). 1 Farman 300 (3 240 Lorraine "Mizar").

Poland.—6 Fokker FVIIa (1 450 Lorraine). 9 Fokker FVIIb 3m (3 230 Junkers L5). 13 Junkers FB (1 450 Lorraine). 2 PW S20 (1 450 Lorraine). 1 PW S24 (1 450 Lorraine).

Spain.—1 Breguet 280T (1 450 Renault). 2 Fokker FVIIb 3m (3 300 Wright "Whirlwind"). 2 Fokker FVIIb 3m (3 230 Armstrong Siddeley "Lynx"). 1 Ford 4AT (3 300 Wright "Whirlwind"). 2 Junkers G24 (3 300 Junkers L5). 1 Savoia S55 (S) (2 500 Isotta Fraschini).

Sweden.—3 Junkers F13 (A & S) (1 320 Junkers L5). 2 Junkers G24 (3 320 Junkers L5). 1 Junkers G24 (S) (3 320 Junkers L5). 2 Junkers W33 (A & S) (1 320 Junkers L5).

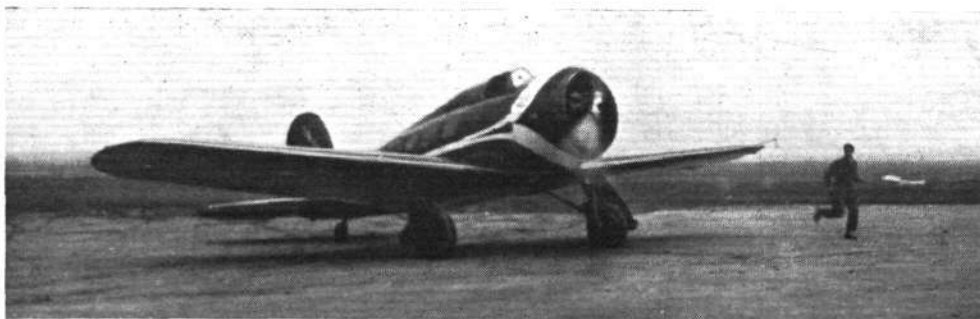
Switzerland.—1 BFW M18d (1 230 Armstrong Siddeley "Lynx"). 2 Compté AC4 (1 110 "Cirrus Hermes"). 1 Compté AC8 (1 240 Lorraine "Mizar"). 2 Dornier Merkur (1 500 BMW VI). 1 Fokker FVIIa (1 450 Gnome Rhone "Jupiter"). 3 Fokker FVIIb 3m (3 230 Armstrong Siddeley "Lynx"). 5 Fokker FVIIb 3m (3 300 Wright "Whirlwind T6"). 1 Fokker FXI (1 240 Lorraine "Mizar").

SWISSAIR LOCKHEED VISITS LE BOURGET

ON May 19, the Lockheed "Orion" mail plane which, as we have previously recorded in FLIGHT, has been put into service by the Swissair Co. on their Zurich-Munich-Vienna air route, paid a visit to Le Bourget Aerodrome. Piloted by Walter Mittelholzer, the well-known Swiss airman, and carrying four passengers, amongst whom were the Swiss Federal Councillor, Monsieur Georges Musy, and Col. Mesner, the President of the Aero Club of Switzerland, the "Orion" took off from Zurich at 9.27 a.m., and made a short stop at Basle in order to obtain some maps. Taking off again from Basle at 10.05 a.m., the machine arrived at Le Bourget at 11.23 a.m., having covered some 420 km. (261 miles) at the rate of 195 m.p.h. After encircling the field a couple of times, Mittelholzer let down his landing gear and alighted, bringing his plane up to the concrete "apron" in front of the executive offices of the airport, where he was welcomed by a large crowd of invited guests.

A number of well-known French constructors and engineers were present to see the demonstration and examine the plane, amongst whom were noted Louis Bleriot, Henri Farman, Michel Wibault, Rene Caudron, Lacoste of the Hispano Co., Marcel Weyman, and the engineers Herbermont, Deville, Brun, Cammermann, etc., together with the executives of many air lines.

After allowing a short period for this examination, Mittelholzer took off again and encircled the airport for



The Lockheed "Orion" of Swissair landing at Le Bourget Aerodrome.

some fifteen minutes, showing the fine lines and speed of the "Orion" to advantage. On landing a second time he drew up in front of the hangars, and a representative of the "Swiss Air" mounting one of the wings, gave a short history and description of the machine.

It may be of interest to note that the difference in speed of one of these Lockheed low-wing monoplanes when flying with the wheels retracted, as against flying with the wheels in a landing position, is about 35 miles per hour.

The official tests of the Lockheed "Orion" plane made by the National Swiss Air Office on April 29, 1932, gave the following results. The plane, fully loaded, attained a height of 58 ft. 6 in. (18 m.) within a distance of 1,600 ft. (500 m.) from the point of "take-off."

A landing was made within 1,550 ft. (480 m.) after passing over an obstacle 39 ft. (12 m.) in height. The plane climbed from 1,600 ft. (500 m.) to 4,900 ft. (1,500 m.) in less than 3 min.

R. C. W.

"Deruluft" Resumes Summer Services

THE Russo-German Aircraft Operating Company "Deruluft" resumed its summer services on May 1. Machines leave Berlin every evening at 11.30 p.m. and reach Koenigsberg at 3 a.m., Riga at 6.50 a.m., Tallin at 9 a.m., Leningrad at 11.20 a.m. and Moscow at 12.30 p.m. The machines used are Rohrbach "Rolands" (3-engined), Dornier "Merkurs" and Junkers F.13's.

The Australia-England Air Mail Services

THE Australian air operating companies are still negotiating for an 18-days' service between England and Australia. They propose to use Wyndham, in North-West Australia, as a base, from which the service will also run to Derby, Broome, Onslow, and Perth, along the present West Australian Railways route. On the inward service two aeroplanes will leave Wyndham simultaneously for Newcastle Waters, in North Australia, whence one will go south to Adelaide and Melbourne, and the other direct to Sydney, dropping the Queensland mail at Camooweal to be picked up by the Qantas service. The promoters of the scheme hope to obtain the Federal Government's consent to lumping the present subsidies and devoting the money

to the service beyond Wyndham and the contributory services to the capitals, for which the amount is deemed sufficient. It is understood that through the representations of Imperial Airways the promoters are prepared to co-operate in establishing an "All-Red" service. The Larkin Aircraft Supply Company is submitting a rival scheme for a 16-days' service between Melbourne and Croydon in co-operation with Royal Dutch Airways, with the Australian base at Darwin.

Karachi-Madras-Colombo Air Service

MR. N. VINCENT, Deputy Director of Civil Aviation for the Government of India, will leave his present office at the end of July in order to direct the air mail service which Tata, Sons, Ltd., hope to start between Karachi and Madras in September. A condition in the contract provides that Messrs. Tata shall extend their air service from Madras to Colombo within a year of the Ceylon Government's sanction being obtained and certain other preliminaries arranged. The Ceylon Government's sanction is already on the way, and Mr. Vincent hopes to operate the Karachi-Madras-Colombo service from the middle of next summer.

AIRPORT NEWS

CROYDON

ANOTHER week of miserable weather! Optimism, however, prevails that an improvement is not far off. The passenger traffic, in spite of the weather, is well up to normal for the time of year, particularly on the London-Paris route. The third Polytechnic Tour started on Saturday and, as usual, was full up.

Capt. Codos, of Air Union, arrived on Saturday in a two-seater all-metal "Breguet" en route for Brooklands.

The Air Union held their annual party and dance on Saturday evening. Before this started the Brooklands display was witnessed, and afterwards three "Loire" and two "Breguet" machines transported the crowd to Croydon, where they proceeded to the hotel to make merry for the remainder of the evening.

On Friday next, one of the leading Croydon stores is holding an "aviation day." I understand that Mr. J. A. Mollison and Miss Amy Johnson will be opening the show and giving lectures on flying. In the afternoon, by arrangement with Imperial Airways, flights over London in Handley Page 42's will be made, following which, tea at the stores.

Capt. O. P. Jones returned from Glasgow on Tuesday with the Handley Page 42. This machine caused gasps of astonishment in Scotland, for the Scots seldom see such large aircraft. Approximately three thousand people took flights during the two days the machine was North. There is not the slightest doubt these machines have given Imperial Airways a very enviable position in the world of commercial aviation. If ever an aircraft can pay its own way, these should, as they are generally full up, and on Saturday afternoons there are always several hundred people to take flights over London. Their solidity inspires absolute confidence in the public, and their take-offs and landings are wonderful to watch.

The British Air Transport Company have made their "Spartan" appear like some terrifying monster. Strangely enough, the cooling vents in the nose are so arranged that with a pot of paint and a brush a perfect "face" has been created, giving a somewhat unique appearance.

A fair amount of joyriding was done by the smaller companies over the week-end, especially on Sunday, when the weather was quite good.

Traffic figures for the week:—Passengers, 1,023; freight, 42 tons.
P. B.

FROM HESTON

MONDAY, May 23.—F/O. D. V. Ivins left for Jersey in his "Bristol Fighter," having as passenger a friend whose parent had been taken dangerously ill there.

Mr. E. H. Newman proceeded to Munich in Mr. Whitney Straight's "Puss Moth." He is leaving the machine there and returning by motor.

The Hon. Leo Russell left for Rheims in his "Moth."

Mr. Leslie Runciman, with Mrs. Runciman as passenger, returned from Cologne during the evening in their "Puss Moth," on the conclusion of their honeymoon.

Mr. and Mrs. Loel Guinness returned from Cannes in a "Puss Moth."

Tuesday.—Lady Howard de Walden has now acquired "Moth" G-AAVY, formerly the property of Mrs. A. Spencer Cleaver, and she and her daughters are now having a family race to see who can qualify for their "A" licence first. The youngest daughter, aged 9, is already air-minded, and after having a flight is very keen to reach the age when she, too, can learn to fly.

The Hon. Leo Russell returned from Rheims. One private owner set off for Paris, and a Hillman's "Puss Moth" cleared Customs on return from Ireland. F/O. D. V. Ivins returned from Jersey.

Mr. G. E. Archdale did his first solo flight after 5 hr. dual instruction.

Wednesday.—Capt. R. Cazalet, with Maj. Lakin as passenger, arrived in his "Puss Moth" from Wexford, Ireland.

The Earl of Essex came to Heston to-day and had his first flying lesson.

Thursday.—Mr. R. Perkins, M.P., left for a Continental tour in his "Moth."

Two "Puss Moths" of Hillman's left for Dublin to collect pictures of the Irish Sweep Draw.

Friday.—Miss Rosalind Norman, after many disappointments owing to weather, to-day qualified for her "A" licence.

Mr. R. B. Pakenham, the Border Regt., did his first solo flight.

The two Hillman's "Puss Moths" returned from Dublin.

Saturday.—Miss Amelia Earhart was entertained to luncheon at Heston by Mr. Gordon Selfridge, Jnr. Among Mr. Selfridge's party at lunch were Sqd. Ldr. and Mrs. Orlebar, the Hon. Leo Russell, Mr. and Mrs. Nigel Norman and Mr. and Mrs. R. Denman. After lunch Mr. Selfridge flew Miss Earhart to Brooklands' display in a "Puss Moth," several private owners accompanying them in their machines as escort. Later in the day Miss Earhart returned to Heston, again being piloted by Mr. Selfridge.

Mrs. R. B. Pakenham made a successful first solo flight after only 5 hr. 15 min. dual instruction. This is the shortest time yet taken by a lady pupil at Heston, the

record being previously held by Mrs. Brewster, an American lady, who did her first solo after 5 hr. 40 min. dual.

Sir Alfred Beit, Bt., resumed his flying lessons on his return from South Africa.

Mr. R. S. Pilch was another first soloist to-day.

Sunday.—We would again draw the attention of pilots to the fact that when visiting Germany it is essential they should carry with them a third-party insurance policy, otherwise they will be detained at wherever they land until they have taken out such a policy. During the past week two pilots from Heston were detained at Cologne, and it was only after the good offices of our friends at Croydon had been enlisted that they were allowed to proceed. The German authorities made it clear, however, that in future they will allow no exceptions to their rule. We have been informed by a private owner who frequently visits Germany that W. F. Macpherson & Co., insurance brokers, 56, Unter den Linden, Berlin, N.W.7, will issue a third-party insurance covering a period of three months and the whole of Europe for the sum of £3. This information may be helpful to any pilots visiting Germany.

Capt. Cazalet left with one passenger for Nice in his "Puss Moth." Mr. Horne left for Paris in his "Moth," as did Lt. Cdr. Geoffrey Rodd in his "Puss Moth."

The Personal Flying Services' "Junkers" left for Dublin, piloted by Mr. Ledlie, as also did the Hillman's "Puss Moth."

Mr. T. G. Leask carried out his first solo flight after 4 hr. 50 min. dual instruction. His was a most difficult first solo, as wind was continually changing, and the way he brought the machine to land was equal to the work of a pilot of much greater experience.

Another of our old pupils returned to us to-day in the person of Brig. Gen. A. C. Lewin, who has recently returned from Kenya.

Late in the afternoon the Banco "Puss Moth" left with two passengers for Lille.

Mr. R. Dorman received a most interesting letter from Mr. Gerard d'Erlanger from the Argentine, where he is at present on a business tour. He mentioned that he had been able to keep in touch with happenings at Heston by news in aerial and other papers circulating in the Argentine.

Having a business trip to make in a hurry, Mr. d'Erlanger hired a Comper "Swift" and set off early one morning for Monte Video from Buenos Aires. He covered 280 km. in 1 hr. 15 min. After conducting his business he proceeded in the afternoon to Punt de L'Este, 160 km., which he covered in 35 min., landing on the beach. He got a native to watch the machine all night, shot ducks and geese next morning, and set off on the return journey in the afternoon. Owing to head winds and a forced landing due to an oil leak, he had to land at Buenos Aires in the dark.

AIRISMS FROM THE FOUR WINDS

Atlantic and Pacific Flights Fail

A POLISH airman, Stanley Hausner, set out from Linden, New Jersey, on May 29, with the object of flying across the Atlantic to Europe. After six hours, however, he returned, having encountered adverse weather conditions and experiencing trouble with his instruments. On the same day Nat C. Browne left Seattle—after some difficulty in taking off—on a flight across the Pacific to Tokio. He also had to return a few hours later, owing to a broken oil pipe. Next day he made another attempt, which ended in almost immediate disaster. One report states that the machine caught fire and fell into the sea at Elliott Bay, the pilot and his companion escaping by parachutes. Another report said that the wings of the machine broke in the air during refuelling—in any case, both men were saved by their parachutes.

A.A.F. Squadrons Rehearse

THE inhabitants of the Hendon district were treated last Sunday to an unexpected air display on a small scale. The three Auxiliary Air Force Squadrons stationed there, Nos. 600, 601 and 604, were giving a rehearsal before representatives of the Display Committee of the Air Ministry, and a few friends of the squadrons had taken the opportunity to wander Hendonwards on that day. No. 600 (City of London) Bomber Squadron, as our readers will doubtless remember, has for its Honorary Air Commodore the Rt. Hon. F. E. Guest, who some years ago was Air Minister. The squadron leader is Sqd. Ldr. Stanley B. Collett. No. 601 (County of London) Bomber Squadron shares with No. 600 the honour of having an ex-Air Minister as its Honorary Air Commodore, namely, the Rt. Hon. Sir Samuel Hoare. H. N. St. V. Norman is squadron leader of No. 601. No. 604 (County of Middlesex) Bomber Squadron is under Sqd. Ldr. A. S. W. Dore. All three squadrons are equipped with Westland "Wapitis." The rehearsal indicated that visitors to the Royal Air Force Display at Hendon on June 25 will have cause to be proud of the A.A.F. squadrons.

Professor Piccard's New Venture

PREPARATIONS by Prof. Piccard for his second ascent into the stratosphere are now nearing completion at Brussels, and all being well it is intended to make a start in about a month's time. For his second attempt Prof. Piccard is using the same balloon envelope as before, but a new car has been built for it, spherical in shape and painted white to reduce the amount of heat inside. When the balloon ascends from Zürich it will carry Prof. Piccard and one assistant. A new arrangement for the valve cord has been introduced, by which the cord passes through a U-tube filled with mercury, which will act as an atmospheric seal. To save weight oxygen will be carried in liquid form instead of compressed oxygen in containers. The cabin has four small windows in the floor, and there are two manholes so that if both occupants should be compelled to use their parachutes they can do so simultaneously. A small wireless transmitter will be carried, the batteries for which are placed under the floor of the cabin.

MM. Goulette and Moreau Killed

Two well-known French pilots, M. Goulette—who recently accomplished a record flight from Paris to the Cape—and M. Moreau, have met their death in tragic circumstances. They were flying two survivors of the French liner *Georges Philippar* (which caught fire recently), M. and Mme. Lang-Willar, from Brindisi to Marseilles, on May 25. They were long overdue at Marseilles, when the wrecked machine was discovered on May 29 on a lonely mountain side 70 miles south-east of Rome. All four occupants had been killed.

Death of Prince Ghica

THE death, from poisoning, of Prince Ionel Ghica of Roumania, was announced from Bucharest on May 30. It will be remembered that Prince Ghica recently accomplished a flight from Bucharest to Saigon and back in 18 days in a S.E.T. 61 biplane. At the time we had very little information regarding this flight, so the following additional notes—for which we have to thank Shell-Mex & B.P., Ltd.—may be of interest. The schedule adhered to for the flight, out and home, was as follows (the flying hours being given in brackets). *Bucharest-Saigon*.—March 30, Bucharest-Konia-Aleppo, 1,664 km. 9.10. March 31, Aleppo-Baghdad, 769 km. (4.00). April 1, Baghdad-Basra, 499 km. (4.05). April 2, Basra-Bushire-Lingeh, 877 km. (6.35). April 3, Lingeh-Jask, 397 km. (3.15). April 4,

Jask-Karachi-Jodhpur, 1,572 (9.30). April 5, Jodhpur-Allahabad-Calcutta, 1,650 km. (9.05). April 6, Calcutta-Rangoon, 1,255 km. (7.15). April 7, Rangoon-Bangkok-Saigon, 1,351 km. (9.30). Total distance, 10,034 km. (62.25). *Saigon-Bucharest*.—April 10, Saigon-Akyab, 1,961 km. (12.45). April 11, Akyab-Jhansi, 1,737 km. (11.45). April 12, Jhansi-Gwadar, 1,669 km. (11.15). April 13, Gwadar-Basra, 1,735 km. (11.30). April 14, Basra-Baghdad-Aleppo, 1,268 km. (10.15). April 15, Aleppo-Konia, 507 km. (5.00). April 16, Konia-Bucharest, 1,157 km. (5.00). Total flying time, 67.30 hr. Total distance and flying time, outward and home, 20,068 km. (129 hr. 55 min.). On his return to Bucharest Prince Ghica was not only fêted officially, but was presented by the young Crown Prince Michael, in the name of King Charles II, with the highest Roumanian aviation honour.

Finland-The Cape-Finland: Capt. Bremer's Return

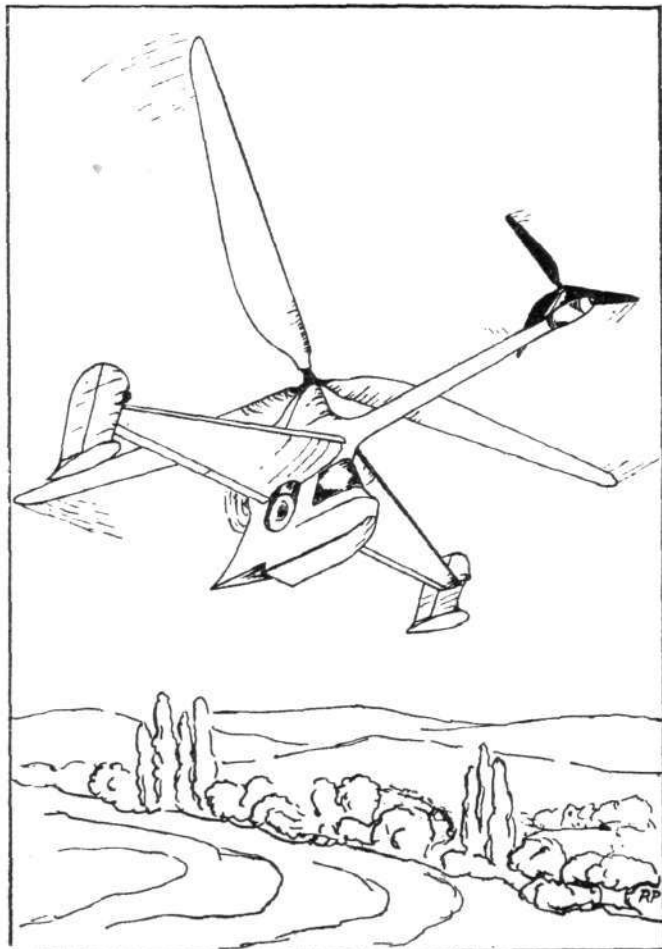
By reaching Helsinki on May 21, Capt. V. E. Bremer, the Finnish airman, completed a remarkable flight from Helsingfors to the Cape and back on his Armstrong-Siddeley "Genet"-engined Junkers "Junior." This flight was not only the first of its kind, but was made on an aircraft of only 80 h.p.

The Latest Caterpillar

F/O. G. J. S. CHATTERTON, of No. 1 Fighter Squadron, Royal Air Force, Tangmere, who saved his life by parachute following a collision over Shoreham on May 26, is the seventh Royal Air Force airman to qualify for the Caterpillar Club during the present year.

International Aerial Navigation Commission

THE International Aerial Navigation Commission concluded its twentieth session in Paris on May 28. Among the principal items on the agenda were:—The protection of life; the publication of flying maps; the application of an age limit for commercial pilots; and the revision of conditions for the granting of certificates of airworthiness.



BETTER AND BETTER: Some time ago we published a "Flight" artist's interpretation of a combined Autogiro, Pterodactyl and Ente. Now our German contemporary "Flugsport" comes forward with above sketch, which is said to represent a serious design by a German engineer. The forward lifting surface of the Ente has, it will be seen, been replaced by a small rotor.

THE ROYAL AIR FORCE

London Gazette, May 24 1932.

General Duties Branch

Flt. Lt. A. H. Beach is placed on retired list; May 24.

Stores Branch

Flying Officer on probation C. H. Baker, M.B.E., is confirmed in rank; January 6. Flt. Lt. A. J. Adams is placed on retired list; May 19.

ROYAL AIR FORCE RESERVE RESERVE OF AIR FORCE OFFICERS

General Duties Branch

P. H. R. Saunders is granted a commn. in Class AA (ii) as Pilot Officer on probation; May 9. The undermentioned Flying Officers are transferred from Class A to Class C:—D. S. King; April 17. H. N. Davies; May 23. Flt. Lt. J. B. Wilson is transferred from Class C to Class A; April 22. F./O. A. G. Store is transferred from Class AA (iii.) to Class C; August 9.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Flight Lieutenants: G. F. Moody, to Station H.Q., North Weald, 14.5.32. F. Kirk, to R.A.F. Base, Gosport, 11.5.32. A. G. Thackray, to No. 1 School of Tech. Training (Apprentices), Halton, 9.5.32. A. H. Wheeler, to Home Aircraft Depot, Henlow, 8.5.32. J. M. Glaisher, D.F.C., to No. 1, Armoured Car Co., Hinaidi, Iraq, 2.5.32. N. Keeble, D.S.C., D.F.C., to Aircraft Depot, Hinaidi, Iraq, 2.5.32.

Flying Officers: N. B. Norris, to Central Flying School, Wittering, 17.5.32. W. K. Beisiegel, to C.F.S., Wittering, 16.5.32. J. E. MacCallum, to C.F.S., Wittering, 14.5.32. P. J. H. Halahan, to C.F.S., Wittering, 17.5.32. H. C. Parker, to C.F.S., Wittering, 17.5.32. A. L. Weait, to C.F.S., Wittering, 17.5.32. L. F. Sinclair, to C.F.S., Wittering, 17.5.32. F. L. P. Hensell, to C.F.S., Wittering, 17.5.32. A. R. Combe, to C.F.S., Wittering, 17.5.32.

Pilot Officer P. H. Heygate, to R.A.F. Depot, Uxbridge, 19.4.32.

Stores Branch

Flight Lieutenants: E. A. Burrige, to Station H.Q., Andover, 14.5.32. H. Seidenberg, to R.A.F. Base, Gosport, 12.5.32.

1931. F./O. L. P. Hirsh is transferred from Class C to Class B; April 1. The commn. of P/O. M. R. C. Thomas is terminated on cessation of duty April 23. F/O. F. G. S. Wilson is removed from the Service; May 19.

Stores Branch

F/O. R. Bassett is transferred from Class C to Class B; June 17, 1931.

Medical Branch

Flt. Lt. D. B. Smith, M.B., is transferred from Class D (ii) to Class D (i); March 19. Flt. Lt. E. J. Mockler, M.B., B.Ch., relinquishes his commn. on appointment to a commn. in the Royal Navy; May 17.

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (BOMBER) SQUADRON.—Pilot Officer N. T. Tangye is promoted to rank of Flying Officer; April 25. No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON.—N. E. Partridge is granted a commn. as Pilot Officer; February 17.

Accountants Branch

Flight Lieutenant: R. G. Dyer, to Station H.Q., Tangmere, 17.5.32. **Flying Officers:** G. H. White, to Station H.Q., Andover, 22.5.32. R. Trippett, to Station H.Q., Northolt, 21.5.32.

Medical Branch

Squadron Leader P. A. Hall, to Princess Mary's R.A.F. Hospital, Halton, 21.5.32. for duty as Med. Officer. **Flight Lieutenants:** M. Pearson, to Station H.Q., Tangmere, 18.5.32. H. C. S. Pimblett, to R.A.F. Hospital, Cranwell, 21.5.32. **Flying Officers:** F. W. P. Dixon, to R.A.F. General Hospital, Hinaidi, Iraq, 18.4.32. C. R. Palfreyman, to R.A.F. General Hospital, Hinaidi, Iraq, 18.4.32.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—**LIEUT. (F./O., R.A.F.)**—D. J. Margetts, to *Britannia*, for R.N. College, Dartmouth (July 20).

ROYAL AIR FORCE.

FLYING OFFICER.—C. A. G. Adye, to *Courageous*, for 404 Flight (May 18).

AIR MINISTRY NOTICES

AIR MINISTRY NOTICE TO AIRMEN, SERIES A

No. 17 of the year 1932. Croydon Air Port : New System of Electric Boundary Lights. (49946/30.)

A new system of electric boundary lights has been installed at Croydon aerodrome, and will be operated experimentally until further notice.

The electric lights, of which there are forty-two, are superimposed on the existing line of gas boundary lights and exhibit an occulting orange light. Each light is supported on a metal fitting, 3 ft. 6 in. high, clearly marked in daylight by means of a triangular wooden lattice base, painted white with a horizontal red band.

The gas lights will remain in operation, in addition to the new electric lights, until the reliability and general utility of the latter have been established.

May 9, 1932

No. 18 of the year 1932. Target-towing practice flying. (163623/32.)

Royal Air Force aircraft will be engaged in target-towing practice flying during the daytime from approximately May 20 to June 20, 1932, over the open country lying to the N. and E. of Biggin Hill aerodrome. The length of the tow will not exceed 1,000 feet.

May 13, 1932

No. 20 of the year 1932. High Tension Cables Crossing the River Thames. (137381/31.)

Pilots are warned that towers for carrying high-tension cables across the River Thames are in course of erection on each side of the River at Dagenham. The towers, when completed, will be approximately 500 feet high, and during erection will be marked by temporary obstruction lights situated as near as possible to the top of the structure.

May 26, 1932

No. 21 of the year 1932. Orfordness Rotating Radio Beacon. (177227/32.)

The experimental rotating radio beacon at Orfordness, Suffolk, (Lat. 52° 04' 59" N., 1° 34' 10" E.), is now being operated continuously every alternate five minutes, i.e., at 00-05, 10-15, 20-25, 30-35, 40-45 and 50-55 minutes past the hour.

A brief description of the beacon, the method of working, details of signals emitted and the manner in which it may be utilised as an aid to navigation, are given in Air Ministry Pamphlet No. 38, entitled "Orfordness Rotating Wireless Beacon: Instructions for taking bearings."

This pamphlet may be purchased at the price of 3d. net, or 4d. post free, from H.M. Stationery Office at the following addresses:—

Adastral House, Kingsway, London, W.C.2.
120, George Street, Edinburgh;
York Street, Manchester;
1, St. Andrew's Crescent, Cardiff;
15, Donegall Square West, Belfast;

or through any bookseller.

May 27, 1932

No. 23 of the year 1932. Croydon Aerodrome : Installation of Neon Ground Lights and Smoke Wind Indicator. (80559/31.)

Notice to Airmen, Series A., No. 22/1932.—Amendment.

Pilots are warned that a trench is being dug in the vicinity of the landing circle at Croydon Aerodrome in connection with the installation of Neon ground lights. This obstruction will exist for approximately three months and will be marked by day with red-and-white obstruction markers, and by night with red hurricane lamps. In addition, a pit will be dug in the centre of the landing circle for the installation of a smoke wind indicator and will be marked in a similar manner.

A plan showing the position of the Neon lights trench is published herewith. May 31, 1932

NOTICE TO AIRCRAFT OWNERS AND GROUND ENGINEERS

No. 14 of the year 1932. Fitting of Unapproved Airscrews. (124790/31.)

Owners of aircraft are reminded that where an aircraft is fitted with any airscrew which has not been approved for airworthiness purposes by the Air Ministry for that particular type of aircraft, the aircraft may not be flown with such airscrew until Air Ministry approval for its use has been obtained, except in so far as the aircraft may be flown without a Certificate of Airworthiness under the Air Navigation (Consolidation) Order, 1923 and the Directions issued thereunder.

Formal application for such approval should be submitted to The Secretary (C.A.2), Air Ministry, details, etc. of the airscrew at the same time being forwarded to Airworthiness Department, Royal Aircraft Establishment, South Farnborough, Hants. April 25, 1932

No. 15 of the year 1932. Fairey-Reed Airscrews : Periodical Examination for Defects. (60361/30.)

Instances have occurred of transverse fatigue failure of the blade sheet of Fairey-Reed airscrews fitted with metal hub blocks, the fractures commencing at the holes for the hub bolts or the tubular bolts securing the metal blocks, and extending towards the leading and trailing edges.

An instance has also occurred of transverse fatigue failure commencing from the identification stamping. It should be noted, however, that this failure occurred only on an early airscrew where the particulars were deeply impressed transversely on the front face of the blades. All airscrews subsequent to F.R. 776 have these impressions effected longitudinally on or near one edge of the sheet near the centre.

As the result of these failures, it is necessary that, in future, frequent inspection of these airscrews in the vicinity of the hub blocks and identification stamping be made.

The blade sheet must be carefully examined on both sides in the above-mentioned regions. Where metal hub blocks are fitted, both sides of the blade sheet visible through the lightening holes must also be examined.

For this purpose, airscrews must be removed from their hubs, and spinners, where fitted, removed from the airscrews. In no circumstances, however, may the hub blocks be removed from the airscrew.

Airscrews on which any signs of fracture are observed must be removed from the aircraft and the matter reported. April 25, 1932

MODELS

SOCIETY OF MODEL AERONAUTICAL ENGINEERS
(S.M.A.E.)

The Wakefield Cup Team

THE official tests for the composition of the team were scheduled for Saturday, May 21, at Wimbledon Common, but the weather was against us once more. A hot and brilliant morning did not fulfil its promise and by three o'clock a fresh, strong wind was blowing over the Common, taking along with it such useful air currents as might have been present earlier. A grey sky brought a downpour of rain which started at about five o'clock, and lasted well into the night. The afternoon was, therefore, spent in partly gloomy, partly-inspired conversation, under shelter or otherwise, and the Trials were put off until the following day, Sunday, May 22. It proved a successful gamble for the day had spells of almost ideal weather, all the more appreciated because there were occasional showers, à la Saturday.

Serious flying began about mid-day. The number of entrants was small, the S.M.A.E. being represented by R. N. Bullock, J. E. Pelly Fry, A. M. Willis, J. W. Kenworthy, and A. E. Doodson. The latter two gentlemen showed the real spirit by travelling from Manchester by car and staying in town after the cancellation on Saturday in order to try their luck next day. They deserved better than a long run of bad luck. Mr. Kenworthy's model—named "Corsair"—broke all the available propellers without qualifying for a place. It was fitted with a rudder well below the thrust line which gave a curious impression that it was flying upside down. It did on one occasion actually fly upside down—fin up in the air—which resulted in a quarter of a "bunt" and a broken propeller. The unusual placing of the fin had given every satisfaction on a small model, but it is suggested that, instead of taking the model out of a side-slip it increases it, and this may explain why the model turned upside down so easily. Mr. Kenworthy intends to fit a rudder of normal type and this will no doubt give him a very fine model.

Mr. Doodson was very unfortunate in breaking his four longerons in eight places. The fuselage was repaired, but he did not make many flights. On short test hops it gave a good impression. The team was, therefore, to be chosen from the three first entrants. The glory of the day, although a tragic one, for the model was lost and not found, was Tony Willis' flight of 186 seconds. This is a new R.O.G. record and he is now the holder of the three greatest records: R.O.G., H.L., and R.O.W. Those who hailed "A.M." as a future "big noise"—quiet as he is—have not been mistaken. Everyone was sorry to hear that the model could not be found, but he is sending to America the model which holds the H.L. record at 9 minutes odd. So it may be even a better one.

R. N. Bullock had his last year's Wakefield Model out, which climbed strongly and started across the Common with big strides, landing in a street behind Willis who was looking for his own machine. His best flight was exactly two minutes, the next best, 115 seconds.

Mr. Pelly Fry had built a new model for the job, a fairly large low wing monoplane of unmistakable "P.F." lines. Its wing is made up of two halves to simplify transport, and has a built-up box-type main spar. It has a new wing section—at least for models of recent type in this country—which has a concave lower surface. His best flight lasted 126.5 seconds and also ended in a garden across the Common. With any wind blowing, these models fly dangerously far, and their owners are not keen to put all the turns on the motors for fear they fly away altogether. The "Stork" landed twice in a tree but was retrieved with little damage.

We have, therefore, our team of three: R. N. Bullock, J. E. Pelly Fry and A. M. Willis. It is as strong a selection as I can think of, and the good wishes of all aeromodelists will go with them across the water. Let us hope for better results than last year.

Result of Wakefield Trials.

Entrant.	Club.	Flights.
R. N. Bullock	S.M.A.E. ..	120. 116.
A. M. Willis	S.M.A.E. ..	186 (Record).
J. E. Pelly Fry	S.M.A.E. ..	63 126.5. 119.

The "Flight" Cup

It was unfortunate that Saturday, May 28, proved no better as regards weather than usual, as this undoubtedly kept many competitors away from what proved to be a very interesting new competition for the "Flight" Cup. This took the form of a "steering" competition, run on similar lines to those held by the "power boat" clubs, but over a course of 200 yards.

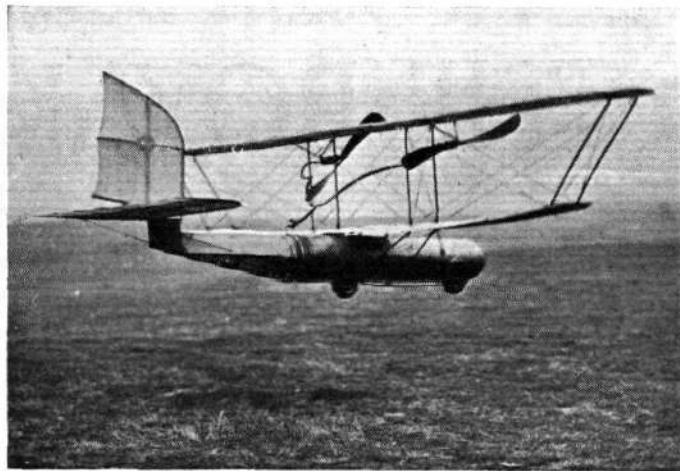
After heavy rain all the afternoon, the weather cleared about 5 p.m., and with very little wind, which possibly in this competition would have helped, a start was made. Mr. Evans was first away and had very hard luck, his model making straight for the "bull" at an altitude of about 3 ft., but unfortunately, it landed 10 yards short of the finishing line. Mr. Johnson also had a similar experience with his model, and in subsequent flights both of these competitors' models kept fairly straight courses, but landed short of the finishing line, thus losing the necessary points.

Only one "bull" was registered, this by Mr. A. T. Willis, who won the cup with a total of 8 points. "Tony" Willis was second with 5 points, and Capt. C. E. Bowden third with 3 points.

The competition for "power-driven" models (other than elastic), which was to have been held on June 18, will be held at the end of July. The actual date and ground will be announced later.—S. G. Mullins, Hon. Sec. S.M.A.E., 72, Westminster Avenue, Thornton Heath.

A POWER-DRIVEN MODEL

OUR readers may be interested in the accompanying illustration of a power-driven model which recently flew successfully at the London Gliding Club ground at Dunstable. It is a tractor biplane, the upper plane of which is 5 ft. span, and is straight; the lower plane is 4 ft. span, with a dihedral angle. Both have $8\frac{1}{2}$ -in. chord and the maximum gap is $8\frac{1}{2}$ in. The stabilising fin is the same chord and section as the main planes and 18 in. span. The complete model weighs 2 lb. 4 oz., and the power is from compressed air. The container made by Mr. D. A. Pavely, is 2 ft. long, and 4 in. in diameter, and weighs 1 lb. 2 oz., while the engines are horizontally-opposed twins made by Mr. H. H. Groves and weigh $1\frac{1}{2}$ oz. each. The valves are rotating flat discs, screw-driver driven, as on the Desoutter pneumatic drill. The propellers are 13 in. diameter and are driven in opposite directions so as to eliminate torque. In order to minimise the downward pull, due to their high mountings, the tractors are set at a slight angle so that the slipstreams strike the upper surface of the tail. The container has a bamboo skid mounted underneath and is meant to take the landing shock. Celluloid



wheels lightly sprung enable the machine to take off under its own power, but are not meant to take the landing load.

The full working pressure is 100 lb., and the container supplies the flying power for 45 seconds. The engines continue to run for a further minute.

A New Model Club

THE "Northern Heights" Model Flying Club made its debut on May 10 at the Shaftesbury Hotel, Hornsey Rise, N.19, where a clubroom has been placed at the disposal of the club, and where meetings will be held on Tuesday evenings at 8 p.m. On May 31 the first lecture was given by Mr. C. J. Burchell on "Model Design Methods." The membership of the club is at present 22, and further particulars may be had from the Hon. Sec., R. J. Linfoot, 213, Junction Road, Upper Holloway, N.19.

PUBLICATIONS RECEIVED

Étude Théorique et Expérimentale de la Stabilité des Avions. By J. Quessette. Paris: Gauthier-Villars & Cie. Price Fr. 20.

Travaux du Cercle d'Etudes Aérotechniques: V. Contribution à la Théorie des Ailes Sustentatrices. By Maurice Roy. VI. *Flexion et Torsion des Ailes Cantilever.* By Léon Kirste. Le Centre de Documentation Aéronautique Internationale de l'Aéro-Club de France, 6, Rue Galilée, Paris.

Economic Conditions in Canada, 1931. Report by F. W. Field. Department of Overseas Trade: No. 508. London: H.M. Stationery Office, W.C.2. Price 4s. 6d. net.

Zeppelin Adventures. By Rolf Marben. London: John Hamilton, Ltd. Price 7s. 6d. net.

Bristol Municipal Airport. The Manager, Bristol Airport, Bristol. *Sands, Clays and Minerals.* Vol. 1, No. 1, April, 1932. A. L. Curtis. P.O. Box 61, Westmoor Laboratory, Chatteris.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors. (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published May 26, 1932

27,012. HOLOPHANE, LTD. (SOC. ANON. FRANCAISE HOLOPHANE). Aircraft appliances for lighting the ground and providing a beacon. (372,215.)

29,278. J. ARMAN. Apparatus for towing hydroplanes on the sea. (372,230.)

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2,970. DE HAVILLAND AIRCRAFT CO., LTD., and A. E. HAGG. Aeroplane wings. (372,344.)

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